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The new President has taken office this week, and the new administration has begun its difficult task. In common with all good citizens, we wish the President and his supporters the success which, we believe, they will honestly endeavor to deserve. We hope that their efforts may be successful, and that during the next four years we may see a return to business activity and prosperity, in which the mineral industry is always so important a factor.

Late advices confirmed by Captain De Lamar himself, state that Capt. J. R. De Lamar has surrendered the option which he secured some time ago on the majority of the stock of the Mercur Gold Mining and Milling Company. The option did not expire until March 22d, but the holder saw fit to give it up at an earlier date, and to forfeit the $25,000 which he had deposited as security, examination having convinced him that the price fixed was too high, while the owners declined to reduce it. The option was at $7.50 per share or at the rate of $1,500,000 for the entire property. Captain De Lamar already has considerable interests in the Mercur district, and the purchase of the Mercur's stock would have given him practically the control of the district and its water.

Some of the Connellsville coke operators seem to be preparing for the approaching exhaustion of the coal mines of that region. The Frick Company is said to be negotiating for coal properties in West Virginia, and Pittsburg parties have also been buying extensively in the same State. Few coal regions in the United States have been more actively or more closely worked than the Connellsville District in recent years, and it is not a matter of surprise that a limit to its production should be reached. Of course it will be some time yet before the mines begin to give out, but the large operators have to look to the future. It is fortunate for them that they have not to go far to find new supplies.

We are informed that the National Ore and Reduction Company of St. Louis, represented by Mr. C. L. Hartsfeld as "contracting agent," is now endeavoring to make arrangements to erect a smelter in San Francisco, and the aforesaid "contracting agent" is trying to interest capitalists in California in the company. A reference to the files of the *Engineering and Mining Journal* will show that Hartsfeld has come forward from time to time during the past dozen years with his peculiar methods in different cities and under the guise of differently named companies, and has uniformly left financial wrecks behind. The *Journal* has expressed its most unfavorable opinion of his devices and methods on many occasions, and it is only necessary to add here that any investment of capital made in his smelter is likely to be one upon which the investors need expect no return of interest or capital.

The operators who have been promoting West Australian mines in London have made much of unfavorable labor conditions in the colony as an excuse for the slow growth of the gold-mining industry and the small increase in the gold production. Recently, in answer to some representations made by the London Chamber of Commerce, the government of the colony stated that the conditions imposed by law, requiring a certain number of men to be employed on each claim, were not new, having been in force for several years without any complaint. The government further announced its readiness to undertake any reasonable modifications in the law, provided those actually engaged in mining would agree upon and present the amendments.

It does not appear that the difficulties in the case are with the labor conditions so much as with the mines themselves. Wages are high, as might be expected in a new and rapidly growing country, where labor is likely to be scarce, but the requirements of the mining law are not excessive. Its object is to secure the working of claims taken up, and to prevent the locking up of large areas by speculators who might neither work nor abandon them. In this respect it is not at all probable that the law will be materially modified. It is quite evident that the excuse of labor conditions is intended chiefly for the London market.

The mineral industry of Canada last year showed a substantial increase over 1895, and the value of its products has reached the highest amount ever reported, notwithstanding the low prices of some products. The greatest gains were in the precious metals and in lead and copper, and these were due to the active working of the new mines in British Columbia, which are now attracting so much attention, both in the Dominion and outside. The large shipments from Trail Creek, Ainsworth and the Slocan country have already been noted, and they make up the greater part of the increase in those metals which appears in the statement, and which, from present appearances may be expected to continue. In the Ontario nickel mines a decrease in production is reported, which was doubtless due to the fact that the markets for the metal have been somewhat oversupplied, and the owners of the Sudbury mines have not pushed their working. The Nova Scotia gold mines reported about an average year. In Quebec and Eastern Ontario there was very little change. The increase in coal production was considerable, coming wholly from Nova Scotia, as the British Columbia mines reported a decrease.

The total mineral production of the Dominion is valued at $23,627,305, and is now nearly double that of ten years ago. For the prompt report made much credit is due to the Geological Survey and its statistician.

Pig-Iron Production.

The production of pig iron at the opening of the present year was at the rate of 161,600 tons weekly, or very nearly the same as at the beginning of 1895. It was considerably above the lowest point reached last year, in October, when the output, gauged in the usual way by the capacity of the furnaces in blast, was at the rate of not much over 5,000,000 tons a year. From this lowest point there was a slight recovery in November and a much greater one in December, again followed up by an increase in activity to the point named above, 161,600 tons a week, which would be equivalent to a total of about 8,250,000 tons a year. The reports from the furnaces at the beginning of February showed another improvement, though a slight one, the weekly capacity of the active furnaces rising to 166,150 tons, putting production up to the rate of about 8,500,000 tons yearly. The indications at that time were not especially favorable to further gain, and it did not seem probable that there would be any considerable change for the better.

The breaking up of the steel billet pool, followed by the sudden disruption of the steel-rail pool, have caused a marked change in the situation, and an increase in the number of active furnaces is already noted. The heavy orders for steel rails which have been placed secure a large demand for pig iron, and we hear of furnaces going into blast and of heavy shipments from the stocks of Lake Superior ore at the receiving ports on Lake Erie. The supplies of pig iron on hand will not by any means be sufficient to meet the demand.

The change, of course, affects the producers of Bessemer pig and is felt chiefly in the Western Pennsylvania and Ohio furnaces. For foundry and forge iron there is as yet very little increase in demand. The Eastern anthracite furnaces show a long idle list, and the charcoal iron makers are doing less than at the beginning of the year, when there seemed to be a special demand for their product. Some of the older Eastern furnaces, indeed, which were last blown in at the time of the great rush in the latter half of 1895, seem preparing to give up the competition and withdraw altogether from the field.

The Southern furnaces generally maintain their activity, and show this year about the same production as they did last year. They have been aided in recent months by the demand for export, which still continues to show considerable proportions, though it is really small when compared with the consumption at home. The foreign sales have been very serviceable in filling up a gap, and though necessarily made at a low price, they have probably been covered without loss, or at a small profit.

Much of the iron made this year must be sold at a low price, to correspond with the figures at which orders for billets and rails have been taken. The prices for Lake ores have not been fixed yet, but there is little doubt that they will be lower than those of 1896. Coke is selling at a lower price, and generally low quotations for raw materials seem to be fixed for some time to come.

The Chicago Meeting of the Institute of Mining Engineers.

The seventy-second meeting of the American Institute of Mining Engineers, held in Chicago, February 16th to 20th, was the sixty-ninth which I have attended. I am safe in saying that no other member of the Institute has such a record of attendance; and I may consequently assume, without arrogance, to be a good judge of the comparative, as well as the absolute, interest and success of an Institute meeting.

There are two principal standpoints from which any meeting of the Institute may be judged. The first is the immediate social pleasure and professional profit derived by those in attendance from the personal intercourse, oral discussions, entertainments and excursions connected with the meeting. The second is the permanent net result as expressed in the published *Transactions*. It may be fairly said that with the growth of the Institute (which now numbers some 2,600 members and associates, scattered over all parts of the world, of whom, on the average, probably not more than 100 are present at a given meeting), the latter standpoint has become the more important. That is to say, no matter how good a time the members attending a given meeting may have, it will be rated by the vast body of the membership as relatively unsuccessful if it does not leave upon record valuable contributions to professional literature. On the other hand, the experience of twenty-six years has abundantly proved that the social pleasure and professional stimulus of the meetings is the indispensable and prolific source of valuable contributions to the *Transactions*. If there were no meetings, there would speedily be no *Transactions* worthy of consideration.

It is, therefore, matter for double gratitude when a meeting fulfills in both respects the standard set by the history of the Institute during more than a quarter of a century. This is eminently true of the late Chicago meeting.

To begin with the particulars affecting directly those who attended the meeting, the wisdom of the local committee in selecting the hotel headquarters and the place of sessions should be recognized. All the sessions except one (and that one not far away) were held in the great Auditorium Hotel, which furnished a commodious room for the purposes. Perhaps nobody but the secretary knows how much this means in the way of saving of time and increased attendance at sessions as compared with the selection of a hall at a considerable distance from hotel headquarters. The facilities furnished by the Auditorium Hotel for sessions and committee work, taken together with its comfortable and efficient entertainment of members, made it an ideal headquarters for meetings of this kind.

Next to this primary exhibition of good judgment on the part of the local committee should be mentioned its excellent arrangement of the excursions. The usual temptation of a local committee under such circumstances (and the one to which, I may be permitted to say, it too often succumbs) is to provide for too many excursions *en masse*, thereby half killing its guests with kindness. At Chicago the general excursions comprised visits only to the Field Columbian Museum, the shops of the Illinois Central Railroad Company and the works of the Illinois Steel Company, while a large number of local institutions and establishments were thrown open to the informal inspection of members interested, without the formality and fatigue of official excursions. This is as it should be. Regarding the three general excursions named it may be said also that they were most felicitously selected and efficiently executed. The abundant and graceful hospitality of the Illinois Steel Company deserves special recognition.

The reception given to the Institute by the Technical Club of Chicago should be mentioned here as a social occasion of the most charming character. This comparatively new club, under the presidency of Robert W. Hunt, a member and past-president of the Institute, comprises just the people whom the visiting members were glad to meet.

Finally, I feel bound to record—though this is a matter for which, I suppose, the local committee can scarcely claim credit—that the Chicago weather was, on the occasion of this meeting, remarkably (I had almost said "exceptionally") fine.

As to the value of the papers and discussions of the meeting, it may be said that the usual standard of the Institute was fully maintained. Among the papers presented in print, but not read at length, the elaborate account of the geological relations of the Port Henry magnetites, by Professor Kemp, of Columbia, will take rank as a classic. The discussion of Mr. Sauveur's Colorado paper on the microstructure of steel, and current theories of hardening comprised printed contributions from such eminent authorities as Ledebur, Osmond, Arnold, Roberts-Austen and Howe, and was enriched by remarks from Messrs. Hibbard, Dudley, Waldo and Campbell, which will be published hereafter. The whole discussion constituted an admirable summary of existing theory on this fascinating subject.

Three papers, all of which will be properly illustrated when published, and two of which were illustrated with numerous lantern-views when presented, exhibited in a striking way the chief element in the recent progress of American mining and metallurgy, namely, the mechanical handling of large masses of material. I refer to Mr. Lewis's paper on the Chicago Drainage Canal; Professor Denton's paper on Mining Methods in Northern Minnesota, and Mr. Sahlin's paper on the Handling of Material at the Blast Furnace. President Spilsbury, in his address on the progress of the last decade, did not fail to recognize the importance of this factor, which has largely revolutionized practice at the mine and the furnace.

Numerous other papers and discussions are worthy of mention; but I do not purpose giving a complete catalogue. Suffice it to say that the members who did not attend this meeting will have no reason to complain of the legacy of interesting and profitable literature which it has left to them.

R. W. R.

NEW PUBLICATIONS.

Locomotive Mechanism and Engineering. By H. C. Reagan, Jr. Second edition. New York; John Wiley & Sons. Pages, 420; illustrated. Price, $2.

The second edition of this practical treatise has been enlarged by the addition of 100 pages on the electric motor and its management in operation. The book generally is a practical one, and while it has not the breadth and scientific scope of Forney's *Catechism of the Locomotive*, it is a manual for which many useful hints may be obtained.

The Undeveloped Coal-Fields of Nova Scotia. By E. Gilpin, Jr. Halifax, N. S.; published for the author. Pamphlet; pages, 16.

This is a reprint of a paper read by Mr. Gilpin before the Nova Scotian Institute of Science. His long experience as Inspector of Mines of the Province and his knowledge of its geology have enabled the author to give an interesting summary of the coal reserves and of the probable loca-

tions of new coal-fields which may be drawn upon in the future. The deposits now worked are quite sufficient to meet any demand likely to be made upon them for some time to come. The growth of the industry is limited at present by the home demand, including that of Eastern Canada, very little Nova Scotia coal going further west than Montreal. There are, however, several fields which may repay development in the future when their output is needed, and where these are to be found is shown in Mr. Gilpin's paper.

GETTING GOLD: A PRACTICAL TREATISE FOR MINERS, PROSPECTORS AND STUDENTS. By J. C. F. Johnson. London, England; Charles Griffin & Company, and Philadelphia; the J. B. Lippincott Company. Pages, 204; illustrated. Price, $1.50.

This is not at all intended to be a scientific work, and its directions are based entirely on practical work and "rule-of-thumb" methods. It has been written chiefly for the Australian miner, and all its illustrations are drawn from Australian practice and Australian methods. It has chapters on prospecting for alluvial gold and for quartz veins; on the extraction of gold by various processes, the nature of ores and several other topics. Perhaps the most interesting part of the book are the chapters containing directions to prospectors on the best methods of taking care of themselves, providing food and other necessaries, making camps and the like. In these can be found many useful hints evidently drawn from experience; and many of the directions are just as applicable here as on the other side of the globe.

BUREAU OF MINES, BRITISH COLUMBIA: BULLETIN NO. 3, REPORT ON THE SLOCAN, NELSON AND AINSWORTH MINING DISTRICTS. By William A. Carlyle. Victoria, B. C.; Public Printer. Pages 96; with map.

The prompt issue of these preliminary reports by the British Columbia Bureau of Mines does much to increase their usefulness. The present *Bulletin* covers three districts which are just now attracting a great deal of attention, and into which a great number of miners and prospectors are going. It was not until 1891 that much was known about these districts, and shipments of ore first began in 1894. Development was delayed by imperfect means of transportation, and it was in 1896 that the rush to the districts really began. The Slocan is now the first mining district in the province, judged by the number of its mines and the quantity and value of ore shipped. In 1896 there were 42 shipping mines and the value of the ore was over $2,000,000. The Slocan and Ainsworth mines are silver-lead propositions; the Nelson mines silver-copper, with a little gold. What all the districts most need at present is better facilities for transportation, and these are gradually being supplied. At present by far the greater part of the ore shipped goes to the United States for treatment.

With regard to the geology of the districts, only such an outline is given in the reports as is possible from a preliminary examination. A great many interesting particulars are noted about the mines themselves, the methods and probable costs of working and the results so far obtained. The report will be of great service to the many who are now interested in the mines of British Columbia.

BOOKS RECEIVED.

In sending books for notice, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review on another page of the Journal.

Summary Report of the Geological Survey Department for the Year 1896. Ottawa, Canada; H. M. Printer. Pages, 144.

Metallurgy of Cast Iron. By Thomas D. West. Cleveland, O.; Cleveland Printing and Publishing Company. 1897. Pages, 573; illustrated.

Bureau of Labor and Industrial Statistics: Fourth Annual Report of Inspection of Factories in Michigan. Lansing, Mich.; State Printers. 1897. Pages, 232.

Annual Report of the Board of Regents of the Smithsonian Institution, Showing the Operations, Expenditures and Condition of the Institution to July, 1894. Washington, D. C.; Government Printing Office. 1896. Pages, 770; illustrated.

Geological Survey of Canada: Report on the Geology of a Portion of the Laurentian Area Lying to the North of the Island of Montreal. By Frank D. Adams. Ottawa, Canada; H. M. Printers. 1896. Pages, 184; with map and illustrations. Price, 15c.

Missouri Geological Survey; Volumes VI. *and* VII. (1894)—*Lead and Zinc Deposits.* By Arthur Winslow. Pages, 763 in all; illustrated. *Volume* VIII. (1895). *Annual Report for* 1894. By Charles R. Keyes, State Geologist. Pages 405, with map and illustrations. *Volume* IX. (1896). *Reports [on Areal Geology; sheets* 1–4. Charles R. Keyes, State Geologist. Pages 388, with maps and illustrations. *Volume* X. (1886). *Surface Features of Missouri and Bibliography.* Charles R. Keyes, State Geologist. Pages, 533; with maps and illustrations. Jefferson City, Mo.; State Printers.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested. Letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

Mica Production in the United States.

Sir: Kindly inform me through the *Engineering and Mining Journal* of the commercial value of sheet mica, and of the approximate products of the years 1895 and 1896. J. C. REID.

MINERAL, KAN., Feb. 22, 1897.

[The production of mica in the United States in 1895 was reported in *The Mineral Industry*, Vol. IV., as follows: Sheet mica, 6,200 lbs.; total value, $6,400, or $1.03 per lb.; ground mica, 750,000 lbs.; total value, $31,956, or 4¼c. per lb. The production for 1896 will be given in *The Mineral Industry*, Vol. V., shortly to be issued. The commercial value of sheet mica depends entirely on the size of the sheets which can be obtained from the blocks mined, their color and clearness.—ED. E. & M. J.]

The Eureka & Excelsior Mines, Oregon.

Sir: In your issue of February 13th the notice of the Eureka & Excelsior mines, by a special correspondent, is so entirely incorrect that I can only surmise it has been the product of some discharged employee or other discontented individual, and shall be obliged by your inserting the following correct statement.

First. We are working these mines privately and have no company or individual associated with us.

Second. Instead of having reduced our force we have now more men at work in the mines than have ever before been employed during the two and a half years we have operated these properties, or about 20 men more than our usual force.

Third. We are now hoisting daily about 25 tons of ore more than usual, or a daily total of over 90 tons, principally the product of the deepest workings from the 200-ft. level.

Fourth. The working shaft has lately been sunk 110 ft., and the ground for that depth is now being blocked out by levels and raises. Although the development of this deep part of the mine is but very partially completed, we have already opened the largest body of ore yet found in these mines, besides a long extent of ground showing veins of good pay ore in many places.

As it is possible some difficulty may be experienced in working portions of the mine, when the spring thaw sets in, we are accumulating a large reserve of ore at the mill to enable us to continue running the 20 stamps to full capacity until the water abates.

BOURNE, Ore., Feb. 20th, 1897. JOHN LONGMAID.

German and American Technical Schools.

Sir: In the February number of *Stahl und Eisen* appeared an article by Prof. A. Ledebur discussing the circular of the Department of Mining and Metallurgy of the Massachusetts Institute of Technology, the object of the article being to discuss the question whether the method of teaching by combined lecture and laboratory work as developed here is suited for German technical schools and especially for the Mining Academy of Freiberg. A conclusion in the negative is reached, and if this had been all the present letter would not have been written.

But Professor Ledebur makes some comments on the mining course and the methods in use at the Institute of Technology, which cannot remain unanswered. It might also be well to enquire whether the method of study in use at Freiberg, which Professor Ledebur considers so superior to ours, would really be an improvement on the present one here. Professor Ledebur expresses great surprise that the student at the Institute should not only begin his first year with such simple studies as algebra, geometry, French or German, rhetoric and English composition, history, military tactics, general chemistry and drawing, but that courses in literature and general science should be given during the entire four years, thus leaving, as he considers, very little time for the purely professional subjects, such as mining, metallurgy, quantitative analysis, assaying, etc. Professor Ledebur thinks the plan of study resembles more that of a German *Bergschule* (for training foremen) than a *Bergakademie* (for training engineers). He is decidedly opposed to the use of a mining and metallurgical laboratory, as he says it can be nothing more than play, and the time thus wasted might be better applied to extending the lecture courses on professional subjects.

As to the general character of the first year studies, while the necessity for it may be regrettable, it is none the less real. The American high school educates a young man up to a certain point, considerably below that at which he would leave the German gymnasium. He has then to be dealt with in whatever way shall seem to be best suited for his further general mental equipment as well as for his technical training. The Institute has sought to perform this delicate task by devoting an entire year to supplemental general studies with a strong infusion of scientific subjects, and the results seem to justify the belief that the method is a truly wise and practical one. Incidentally it may be said that the above unfavorable comparison of the American high school with the German gymnasium is by no means a final one. While the gymnasium is unquestionably superior in many ways, and gives a higher grade of general scholarship, the high school has merits of its own which are not to be despised.

Without going into details, it may be said in a general way that it develops far more of that independence which is as indispensable to effective mental work as it is to character. The German boy gets magnificent drill and a great deal of more or less useful knowledge compactly crammed into him, but he learns to rely so exclusively upon an infallible authority outside of himself, that when he is called upon to act, either mentally or in any other way, he is apt to be less capable of doing so with definite good results than the American boy. The latter has learned in debate and in the field sports, which he has had leisure to cultivate, how to measure himself with others, and his powers have been less cramped by exterior pressure.

German and American methods differ no less in the technical schools than in the preparatory ones. In fact, the differences are fundamental and proceed from causes which affect all departments of life. The student who enters the Freiberg School, having finished his general education, begins directly with specialized studies. During the four years that he stays at the school, all subjects relating to mining and metallurgy are taught with a mass of detail, each subject being developed from its earliest beginnings. The instruction is given almost exclusively by lectures with little or no practical illustration except in drawing and surveying, determinative mineralogy and petrography, physics and chemical analysis, blow-piping and assaying. Thus the mining and metallurgical student is thrown absolutely upon the teacher, and fails to cultivate the necessary habits of observation and comparison. This teaching by lectures goes so far that a student is made to listen for two hours a week during an entire year to lectures on blow-piping; which would be comical, if it were not

such a melancholy waste of time and energy. The result of this system necessarily is to fill the mind of the student with an enormous amount of undigested detail, for the assimilation of which he is unprepared through lack of practical experience, and consequently of judgment. If the young man on leaving the gymnasium at the age of 18 or 19 is less mature than he should be, the method of imparting knowledge during the next four years will not do very much to improve his critical powers or increase his self-reliance.

In the training at our Institute we follow just the opposite line from that described; our main aim is to develop the individuality, the personal judgment, the power to think and act independently. Of course, we give instruction by lectures, but wherever it is possible (and there are very few cases where it is not), we connect the laboratory with the lecture. In the laboratory the student carries out experiments, partly under guidance, partly alone, and learns to think for himself and thus find out why in one case he succeeded and in the other failed.

In our lecture work we leave out most of the historical development and confine ourselves principally to the work of to-day, insisting rather on general principles than on minute details. Our lecture time is often more circumscribed than we could wish, but should never desire to increase it at the expense of laboratory work, experience showing that the powers of the student develop more surely under laboratory instruction and practice than in any other way.

Professor Ledebur comments on the short time our students remain in the chemical laboratory, and argues that this may be the reason why there are such large differences in the results obtained by our iron chemists. May I not quote the words lately spoken by one of the leading iron chemists, Dr. T. M. Drown, who, in commenting on Mr. Thackray's paper on the "Phosphorus Determination in Steel," said* "that determinations made in an hour should present only slight differences in the third place of decimals is certainly matter for surprise and congratulation. This remarkable result has been due, perhaps, in part, to a remarkable cause. The managers of works, ignorant of all the difficulties of the laboratory, have demanded the impossible of their chemists—and the chemists have done it."

In commenting upon the mining and metallurgical laboratory, Professor Ledebur says: "The apparatus that a school can offer to teach the operations always remains simply a model which very soon becomes antiquated, and the handling of it borders more or less upon play." This is absolutely true of the collection of models (*Modellsammlung*) for which his school is celebrated. He mistakes, however, entirely the character of our working machines. I have tried, on a former occasion† to express the uses of a mining and metallurgical laboratory. "In it the lecture instruction is illustrated with practical experiments, carried out by the students themselves. But it has also a larger scope. By the method of experiment, the student learns how to take hold of each problem as it presents itself, and carry it through the different stages until it is solved or the reason is discovered why it cannot be done satisfactorily. He is thus taught to observe closely, to make careful notes, to compare the results obtained, and draw his own inferences and conclusions, and, finally, to report what he has done in clear and accurate language."

Professor Ledebur's conception of a mining and metallurgical laboratory is evidently quite different from the reality as it exists at the Institute of Technology. That such laboratories are actually used to make preliminary tests for the treatment of ore on a large scale, and become thus, as it were, a basis for the construction of ore-dressing and gold and silver-milling plants, is a striking illustration of their very practical nature. In conclusion, Profesor Ledebur states, as showing the excellence of the Freiberg method of training, that from all parts of the world students flock to Freiberg. Fifteen years ago this was as true of the American student as of others; to-day, judging by the report of the Anglo-American Society of Freiberg, comparatively few young men from the United States go there to take the full course; they find that it is more profitable to obtain their general training here. When the graduate has been in practical life for a few years and knows just what he wants he may go for a year to one or the other of the European schools to study under a specialist, as unfortunately in this country instructors in mining and metallurgical subjects are, as a rule, forced to teach a multitude of subjects and cannot concentrate their energies on a specialty as can their more fortunate colleagues on the other side. Many an iron metallurgist has thus been attracted by the great eminence of Professor Ledebur. His discussion of the circular of our department of mining and metallurgy also shows that he is on the lookout for what is going on in other parts of the world to see if the methods in use at Freiberg can be improved upon.

While we feel sure that we shall never supersede the laboratory as a most important instrument of technical teaching, we do not claim that it is perfect, but shall endeavor, as time goes on, to make it as nearly so as possible.

H. O. HOFMAN.

INSTITUTE OF TECHNOLOGY, BOSTON, MASS., March 2, 1897.

* *Transactions* American Institute Mining Engineers, xxv., p. 1012.
† *Ibid.*, xxv., p. 302.

THE MINERAL PRODUCTION OF CANADA.

We gave last week some statements of the production of Canada, and now present below the full table which has been so promptly issued by the Geological Survey, this early date being due chiefly to the excellent work done by Mr. L. L. Brophy, statistical assistant to the survey.

The total value of the mineral output of Canada for 11 years past has been reported as below:

1886	$12,000,000	1890	$18,000,000	1894	$20,900,000
1887	12,500,000	1891	20,500,000	1895	22,000,000
1888	13,500,000	1892	19,500,000	1896	23,627,305
1889	14,500,000	1893	19,250,000		

In the table below, which gives the production in 1896, the figures show the quantity or value of the product marketed. Where tons are used, they are short tons of 2,000 lbs:

SUMMARY OF THE MINERAL PRODUCTION OF CANADA IN 1896.

Product.	Quantity.	Value.
METALLIC.		
Copper (fine, in ore, etc.) lbs.	9,385,576	$1,021,148
Gold		2,810,206
Iron ore tons.	88,206	184,313
Lead (fine, in ore, etc.) lbs.	24,199,977	721,384
Nickel (fine, in ore, etc.) "	3,500,000	1,155,000
Silver (fine, in ore, etc.) ozs.	3,205,343	2,147,589
Total metallic		$8,039,640
NON-METALLIC.		
Asbestos tons.	12,250	$429,556
Chromite "	2,362	25,982
Coal "	3,743,234	8,006,305
Coke "	49,817	111,560
Felspar "	480	1,368
Fire clay "	667	1,427
Graphite "		9,455
Grindstones "	3,663	32,810
Gypsum "	205,203	174,403
Manganese ore "	12	900
Mica		60,000
Mineral Pigments—		
Baryta tons.	145	715
Ochers "	2,250	10,925
Mineral water gals.	706,372	111,736
Natural gas		276,301
Petroleum bbls.	726,882	1,155,646
Phosphate (apatite) tons	570	3,990
Pyrites "	33,715	101,155
Salt "	43,956	169,677
Soapstone "	410	1,230
Tripolite "	664	9,960
STRUCTURAL MATERIALS AND CLAY PRODUCTS.		
*Bricks		1,600,000
*Building stone		1,000,000
Cement, natural bbls.	69,705	60,500
" Portland "	78,085	141,005
Flagstones		6,710
Granite tons.	18,717	105,709
*Lime		650,000
Marble tons.	74	905
Pottery		163,975
*Sands and gravels tons.		120,000
Sewer pipe		153,875
Slate		53,370
Terra cotta		110,855
*Tiles		225,000
Total non-metallic		$15,087,665
Total metallic		8,039,640
Estimated value of mineral products not returned		500,000
Total value		$23,627,305

* Partly estimated.

In this table the copper includes the contents of ore and matte and is valued at 10·88c. per pound. Lead, which includes that in ores and bullion, is valued at 2·98c. per pound. Nickel, all of it in ores and matte, is rated at 33c. per pound. Silver is taken at an average of 67c. per ounce. The value given for natural gas is the gross return from the sales of the gas. In arriving at the quantity of petroleum the barrel of 42 gals. is taken, but the value is computed at an average of $1.59 per barrel of 35 gals.; 42 gals. refined oil are assumed as equal to 100 gals. crude oil.

The increases shown in comparison with 1895 are: Coal, 229,738 tons, or $278,859; copper, 596,394 lbs., or $71,919; lead, 1,124,085 lbs., increase in quantity, but $28,582 decrease in values; silver, 1,429,660 oz., or $988 956; gold, $899,306. The decreases were: Iron ore, 14,595 tons, or $53,757; nickel, 388,525 lbs., or $205,904; natural gas, $146,767.

The gain in coal is altogether due to Nova Scotia, which produced 295,153 net tons more than in 1895, but this increased output is offset in a large measure by a decrease of 104,629 tons in the production of British Columbia. Copper shows a large decrease in Ontario and a small increase in Quebec, while British Columbia's contribution is 3,818,556 lbs., which amount is 1,848,193 lbs. more than in 1895. In gold large increases are to be credited to Nova Scotia and Ontario, but British Columbia heads the list with an increase over the previous year of $497,675.

Owing to the dull state of the iron market during the year, the production of iron ore has fallen off to a considerable extent in all the provinces, with the exception of Ontario. The exception is directly due to the erection of the blast furnace at Hamilton, Ont., the company obtaining all the Canadian ores smelted from that province. The production of lead is altogether that of British Columbia, and has increased in the year by over 1,100,000 lbs., but a decrease in the market price of some 8% lessens the total value by $28,582. Natural gas shows a decrease in value of $146,761, or about 34%, which would seem to be due to a heavy falling off in the production of the Welland gas field. Ontario's nickel production is reduced during the year by nearly 400,000 lbs., and shows a decrease in the value of over $200,000. British Columbia shows an output of silver amounting to 3,135,343 oz., valued at $2,100,689, an increase over 1895 of 1,429,660 oz. in quantity, and in value of nearly a million dollars.

Coal in Natal.—The coal output of all the Natal collieries in 1896 was 216,106 tons, compared with 160,115 tons in 1895.

The Sydney Mint in Australia.—During the year 1896 the Sydney Mint received for coinage 712,809 oz. of gold, value £2,610,459, of which New South Wales contributed 203,336 oz.; Queensland, 467,884 oz.; New Zealand, 36 797 oz.: South Australia, 1,487 oz.; Tasmania, 106 oz., and Western Australia, 1,866 oz. From this quantity of gold were coined 2,544,000 sovereigns, the remainder being used in the form of bullion. New silver coin to the value of £10,800 and bronze coin to the value of £2,800 were issued during the year, worn silver coin to the value of £5,330 being withdrawn from circulation during the same period.

GEORGE W. GOETZ.

George W. Goetz, whose recent untimely death at the age of 42 years has ended a career of high usefulness and great promise, was generally regarded as one of the ablest metallurgical engineers in this country. He was born in Milwaukee, Wis., in 1855, and his early educational advantages were not great. He passed several years in the Milwaukee public schools and one year at the Wisconsin University. When 15 years old he entered the office of the Milwaukee Iron Company. Here he was given charge of the telegraph line connecting the office and mills, and his attention was for the time turned to electrical work. Always an ardent student, he became quite a proficient in this work and invented several new devices, including an indicator which showed the height of the water in the reservoir at the water-works. In 1876 he made the acquaintance of Dr. Herman Wedding, who was then visiting the iron works in this country, and through his influence decided to take a metallurgical course at Berlin. He went to Germany in October, 1876, and remained there four years, studying most of the time in Berlin, though he was for one term at Freiberg. His vacations were passed in visiting the iron works and the mines of Bohemia, Silesia, the Hartz and Sweden, where he acquired much practical knowledge. His relations with his professors were generally friendly, and he received much assistance from Professors Wedding, Winkler, Steltzner and others. After graduating at Berlin he made a special visit to the charcoal iron works of Sweden.

On his return to the United States he obtained a position as chemist in the Otis Steel Works in Cleveland, O., and a year later was placed in charge of the open-hearth steel department. In 1882 he went to Europe with Mr. Otis and made a special study of the great Creusot Works in France. On his return he introduced several improvements in the Cleveland Works. In 1885 he again went to France with Mr. S. T. Wellman to investigate the basic process, with the result that later in that year the first basic open-hearth steel plant in the United States was established in Cleveland with much success. In the following year he made a short trip to Europe, this time to get married.

GEORGE W. GOETZ.

Mr. Goetz remained in charge of the steel works at Cleveland until 1888, when he went to Europe again for Mr. George Westinghouse, Jr., and prepared a very full report on gas and fuel, and especially on the possibilities of making fuel gas to take the place of natural gas in Pittsburg. After completing this work, he visited and examined several mines in Utah, California and Montana, with a view to working their ores by a special process. In 1890 he was appointed consulting engineer for the Schlesinger syndicate, which then owned a number of iron mines in the Lake Superior region, but held this position only a year. In 1892 he was appointed consulting metallurgist to the Illinois Steel Company, the Wellman Iron and Steel Company and the Westinghouse Company. He established an office and laboratory in Milwaukee, where most of his time was passed and where he engaged in many investigations of value In 1894 he made another trip to Europe and prepared a very full report on the fuel question for Mr. Westinghouse. The year previous, in 1893, Mr. Goetz had entertained many foreign engineers who visited the Exposition in Chicago. For a year he had also acted as consulting engineer for the Krupp Works at Essen, Germany.

About the close of 1894, his health began to fail. A trip to California was of some benefit, but he never entirely recovered his strength and was finally forced to abandon his work, at an age when he ought to have had many years of usefulness before him. Few men have left a place so hard to fill.

Mr. Goetz had for his chief characteristic thoroughness. He was never willing to drop a subject he had once taken up until he had mastered it; and the consequence was that few men had so complete an acquaintance with the metallurgy of iron and steel as he had acquired both theoretically and practically, and he was a man of high character and unblemished reputation, an ornament, in every way, to the profession. He was a constant student also, and wasted little or no time, giving himself up entirely to his work. His loss is a cause of deep regret to all who knew him.

Tempering Steel.—In a French contemporary, M. Levat recommends the use of carbolic acid for tempering steel tools. In testing two cold chisels, he tempered one in water the other in a solution of carbolic acid, after both had been heated to a cherry red. The chisels were set to work on extra hard wrought iron. The one tempered in water became notched after a short time, the one tempered in carbolic acid remained perfectly intact. The second test was made with two puddle steel bars, which were heated to white heat and tempered in water and carbolic acid respectively. The bar tempered in carbolic acid showed a much finer fracture, which reflected like a mirror when filed. The carbon contents were not increased, but in the bending test the bar tempered in carbolic acid showed more elasticity and pliability than the other, while its hardness made it most suitable for tools.

APPLICATIONS OF THE CYANIDE PROCESS IN SOUTH AFRICA.

By Charles Butters.

Before the Chemistry Section of the Science Association of the University of California, at Berkeley, recently, Mr. Butters delivered a lecture on this subject. He mentioned the difference of conditions in California and South Africa, the comparatively level character of the African gold-mining districts, and the necessity for impounding the mill tailings there, both on account of the laws protecting rivers, and from the scarcity of water, which has to be recovered from the tailings to be used again in the mill. Hence, millions of tons of low-grade stuff had accumulated in settling dams, until the problem of the day was to find a cheap method of working and moving them. At that time the cyanide process was brought forward. The first plants were erected to treat the coarsest of the tailings impounded, which had been roughly classified by nature during deposition, the slimes being at first left, as difficult of filtration. Ordinarily these tailings were loaded into cars on tracks leading into or over the cyanide tanks. The rejected slimes began to accumulate in quantity, and then the process was extended to them. Then it was applied to tailings settled in special dams, elevated, and treated. Next the method of settling directly in the working tanks was adopted; at present two sets of tanks are used, one directly above the other. The ore settles and receives one treatment in the upper, is drained, and is then shoveled into the lower for re-treatment, the air introduced in the shoveling having a marked beneficial action. In the more recent plants steel tanks replace the wooden ones formerly used, and steel is largely used in the construction throughout. The tanks of the very latest plant are 30 ft. in diameter, the upper 7 ft. 6 in. in height, the lower 8 ft. 6 in., the additional height being to accommodate the material when more loosely deposited by the shovel. The lecturer emphasized the importance of a proper sizing of the tailings, preferably into four grades (concentrates, coarse sand, fine sand, and slimes), though it is usual to be satisfied with two. This is done by somewhat elaborate systems of spitzkasten. Also when settling tailings in the same tanks in which they are to be treated it is essential to regulate the distribution, so that the finer and coarser portions shall be evenly mixed; otherwise the extraction will be irregular.

At first the idea was to use a strong solution of cyanide, giving it a short period of contact, say about 24 hours; the present tendency is to use much weaker solutions with long periods of contact; this necessitates numerous tanks, the best plants having six or seven sets, so that a week's contact can be given, one tank being changed daily. The finest slimes require but short contact, but are difficult to settle; additions of lime, or of almost any salt, facilitate settling. Even after settling the residue contains 50% or more of water, a part of which can be removed by a vacuum pump, which is best applied to a thin layer of the pulp. The coarser sands require long contact, but allow the solution to filter off rapidly.

The original MacArthur-Forrest process, using comparatively strong (0·5 % or so) solutions of cyanide and precipitating the gold from them by metallic zinc, has been to a great extent superseded by the Siemens-Halske method, using very dilute solutions (say 0·06%) with long contact, the gold being precipitated on metallic lead by an electric current of low potential. The Siemens-Halske precipitating boxes were at first of enormous size (30 ft. long, 9 ft. 6 in. wide and 4 ft. 6 in. deep) as compared with the MacArthur-Forrest boxes (about 21 ft. × 3 ft. × 3 ft.), but it has been found possible to reduce them to nearly the same dimensions (as 29 ft. × 3 ft. 6 in. × 2 ft. 9 in.) without losing in efficiency. The lead was at first hung in large sheets; these were 3 in. apart, set across the boxes, alternating with sheet-iron anodes, and so arranged that the liquid passed alternately up and down. Later the anodes were made 6 in. apart and a greater number of lead sheets placed between; the present system is to place the iron plates still vertically but longitudinally in the boxes in parallel sets, the sets being separated by partitions, the lead being now used in the form of turnings thrown loosely upon or between the anodes. The amount of sheet-iron necessary is thus much reduced, an important economy, as in some of the early plants as much as 120 tons was used. In any case the plates are about $\frac{3}{16}$ in. thick, and are covered with cloth (sacking, such as used for wheat) to prevent short-circuiting. The iron is only very slowly attacked; it was proposed to utilize the Prussian blue formed, and regenerate potassium cyanide, but the amount produced is too small to pay for the trouble. The lead is removed monthly and cupelled directly, yielding 3 to 8% of bullion. The litharge resulting is reduced to metal, which is cast into cylinders; these are set in a lathe and converted into turnings for further use.

One most important working detail is the arrangement of pipes. Some plants have miles of pipe, sometimes a complete system for each liquid employed; the lecturer prefers to have only one system of pipe for all purposes. This connects every tank with a central centrifugal pump; this pipe is of large size (say 4 in.), and any pair of tanks can be con-

nected by cocks through the pump, and the liquid contents transferred in a very short time. Mr. Butters then exhibited a large number of plans and sections of important cyanide works, pointing out the gradual changes that experience had led him to adopt; several devices for even distribution of sand in settling, arrangements for expeditiously emptying tanks, etc., were also shown.

ABSTRACTS OF OFFICIAL REPORTS.

Horn Silver Mining Company, Utah.

The report of this company for the year ending December 31st, 1896, gives the financial results for the year as follows: Sales of ore and concentrates, $213,543; store at Frisco, $15,000; interest, rents, etc., $6,941; total receipts, $235,484. The expenditures were: Mining, including timbering and dead work, $171,184; mill expenses, $27,695; general expenses (salaries, insurance, rent, etc.), $30,421: total, $229 300. The balance was $6,184, to which is to be added $220,744 brought over from 1895, making a total of $226,928. From this there was paid (January 2d, 1896) one dividend of 12½c. per share, amounting to $50,000, leaving a balance of $176,928 cash on hand at the close of the year.

The ore extracted from the mine during the year amounted to 34,219 tons, the average value being $6.24 per ton. Of this 5,534 tons classed as shipping ore, and having an average value of $12.93 per ton, were sold to the Germania Lead Works. The remaining 28,685 tons were concentrated in the mill to 5,711 tons, of an average value of $26.88 per ton and sold to the Pennsylvania Smelting Company. The contents of these ores were 48,835 oz. gold; 323,398 oz. silver, and 8,951,619 lbs. lead. The cost of ore extraction was as follows:

	Amount.	Per ton.
Labor on ore	$74,445	$2 175
" " dead-work	13,378	0.391
" surface	23,287	0.680
Supplies	43,282	1.264
Total	$154.392	$4.51

The cost of concentration per ton of crude ore was: Labor, 96·5c.; supplies, 56·1c.; total, $1.526, equivalent to $7.63 per ton of concentrates. The cost of mill work was: Labor, $27,695; supplies, $16,102; total, $43.797.

The dead work included 70 ft. shaft retimbered, 70-ft. shaft sunk, 813-ft. drifts and raises extended. Prospecting work was carried on actively on the 1,100 and 1,200-ft. levels, with encouraging results.

The low price of lead had an unfavorable effect. Work was stopped for about a month by a strike, the company having made a cut in wages after the passage of the eight-hour law in Utah in June. The matter was finally settled and the cut maintained.

Gold Coin Mines Company, Colorado.

This company's statement for the year ending December 31st, 1896, shows that the net mining profit for the year was $110,610, as given in the table below. Sundry receipts, $9,819, brought the total up to $120,429, from which dividends amounting to $85,000 were paid, leaving a balance of $35,429. Cash balance from previous year and payments on account of that year were $17,017, making a total of $52,446. Payments for new machinery, etc., were $28,270, leaving a balance of $29,176. The additions included an air compressor, drills and pumping plant.

The product of the mines was 20,724 tons of ore, the average value of which was $14.94 per ton. This was divided into 1,450 tons smelting ore, average $85.07 per ton, and 19.274 tons milling ore, average $9.66 per ton. The total costs amounted to $9.60, leaving a profit of $5.34 per ton. The receipts and costs of working are stated as follows:

Receipts.	Total.	Per ton.
Smelting ore, 1,450 tons	$123,351	$85.07
Milling ore, 19,274 tons	186,327	9.66
Total, 20,724 tons	$309,678	$14.94
Cost.		
Breaking ore and tramming	51,239	2.47
Hoisting	13,818	0.67
General mine account	20,360	0.98
General expenses	16,272	0.79
Repairing shafts	895	0.04
Accident insurances	815	0.04
Keystone lease	1.498	0.07
Prospecting and dead work	23,642	1.14
Total mining costs	$128,569	$6.20
Kansas mill (13,916 tons; 1,108 tons concentrates)	20,557	1.47
Hidden Treasure mill (5,338 tons; 510 tons concentrates)	12,990	2.42
Royalty on 6,041 tons Hidden Treasure	10,300	1.70
Mintage and smelter deductions	26,662	1.29
Total charges	$199,068	$9.60
Net mining profit	$110,610	$5.34

The Kansas mill costs were made up as follows: Labor, amalgamating and crushing, $0.62; supplies, fuel and water, $0.55; hauling, $0.30; total, $1.47. The mintage and smelter charges included sampling, freight and treatment on 1,450 tons smelting ore and 1,673 tons concentrates. The report gives the following particulars in relation to the mines:

Indiana and Hidden Treasure Mines.—At the beginning of 1896 the work of the company was confined to the 700, 800 and 900 levels in the Indiana mine and the amount of ore in reserve was inconsiderable. The completion of the crosscut from the Kansas mine opened the 1,000-ft. level in the Indiana and this level has been driven rapidly west. The upraise from the 700 Indiana has been extended and is now more than 100-ft. above that level. In addition, two gangs of men are now employed in the 400 Indiana upon breasts of ore 3 ft. wide and the grade of this ore is improving. All of the Indiana levels have been extended steadily westward and developments of interest and value to the company have recently been made in this direction. The surveys indicate that the main Kansas vein will also join the Indiana at a point about 100 ft. west of the present breast of the 900-ft. level. The water in the Hidden Treasure shaft has been lowered to a point below the 1,100 level, and the old workings at this point are being cleared, and as soon as this is accomplished the level will be driven westward into the Indiana mine, thus opening another level, and developing the ground 100 ft. below the 1,000 Indiana, which is at present the lowest point worked. Drifting has also been commenced upon another vein within the company's property, which, at the point of discovery, was about 10 ft. in width, but the ore is of low grade, assaying in the neighborhood of $5 per ton. This vein has only been explored for a distance of perhaps 25 ft. Another vein, also within the company's property, has been recently discovered and is being prospected.

Kansas Mine.—The former workings of the Kansas mine consisted of two parallel veins, being the main Kansas vein and the North vein, and their course has been parallel and separated at different points from 20 to 65 ft. The North vein has not been explored very largely to the west, and it is expected at an early date, to run a crosscut from the long 900 Kansas, which connects with the Indiana, and open it at a point several hundred feet west of the old workings. It has been generally stated and believed that at a point just below the present lowest level of the Kansas mine, the two Kansas veins will join and become one, and explorations of the levels, as they have become unwatered, has revealed the fact that the two veins gradually near each other until separated by merely a thin partition; late advices state that this partition in the bottom of the shaft has been broken through, forming one large excavation. As soon as the property is entirely unwatered, it is expected to immediately sink the shaft and extend the levels. Information dated January 18th, 1897, states that the water has been lowered to a point within a few feet of the bottom of the shaft, where an apparent cave-in has been discovered. It is believed, however, that the shaft is not caved, but that the appearance is caused by waste rock and debris thrown into the bottom of the shaft by the last operators who were lessees, and had no interest in the preservation of the property. Air drills are now in operation upon breasts of ore developed in the 1,150 and 1,050 west and the 1,200 level east, and breasts of ore have been developed in several other levels, among them being the 1,000 east and the 1,150 west, where the work is being conducted by hand.

During 1896 the coal and supplies were hauled by teams from the railroad station to the mine at an expense of $1.50 per ton, and the ore and tailings were hauled from the mines to the railroad station at a cost of $1.25 per ton. A contract has, however, been arranged with the Gilpin County Steam Tramway Company, by which it extends its lines to the Kansas and Hidden Treasure shaft-houses and to the Kansas mill, and will haul the coal and supplies from the station to the mine for 75c. per ton, and from the mine to the station for 50c. per ton. The average monthly tonnage so hauled will probably exceed 1,000 tons, and a considerable economy will therefore be effected. The introduction of these lines is nearly completed, and some of the ore and supplies were hauled over them during January.

THE ACTION OF BORON ON IRON AND STEEL.

By H. N. Warren.

Mr. Warren writes to the *Chemical News* that five or six years ago a somewhat lengthy description was published with respect to the action of boron upon metallic iron, which researches at that time led to the discovery of the now well-known compound boroneisen. Quite recently some rather remarkable notes have appeared in scientific literature on the preparation of that compound by the aid of electrical furnaces; it is therefore the author's intention, after a long and varied experience with the element, to deny most emphatically that anything like such a temperature as the electric arc is required in order to form a boro-ferric compound. Even ordinary ferric borate, obtained by precipitating ferric chloride by means of a soluble borate, may, after drying, be readily reduced, at a red heat, to an amorphous—and at the same time pyrophoric—boride; or may be obtained of a silvery whiteness, fusible at a white heat and containing from 6% boron, by melting the above-mentioned compound under a layer of borax, the compound being of sufficient hardness to cut glass and even scratch flint, the boron being set free in the elementary condition by means of electro-dissolution. This, however, is by no means the only way of impregnating iron with boron; on the other hand, it is extremely difficult to prevent the formation of a boride when a mixture of iron oxide and carbon is exposed to a temperature sufficient to melt the cast-iron thus produced, provided a fusible borate is used as a flux. Again, borax being such a desirable fluxing agent for metallurgic reductions, this compound is generally made use of in smelting small quantities of iron ores, for the purpose of further examination of the iron thus obtained. This reaction is, however, perfectly useless, provided a fluxable borate has been employed, as 100 samples thus reduced by the author all contained more or less boron, averaging up to 2%, while at the same time the iron in most cases appears solely as white cast, the carbon existing in the combined form; also, as a verification test, samples of cast iron were exposed to different temperatures in common with fusible borates, the analyses of all these samples showing a deficiency averaging from ½ to 2% on the total.

Ignition of Coal-Dust by the Sun's Heat.—Our German contemporary *Glückauf* mentions an instance of the ignition of coal-dust by the sun's rays. The surface works of the Maybach Colliery, near Friederichsthal, in the Saar District, are chiefly of iron. On certain girders, the floating dust, due to the tipping of coal on to the jigging-screens, became, in course of time, deposited in a layer more than an inch thick. On a mechanic burning his hand—while repairing a pipe running through the corrugated iron forming one of the south walls—the official inquiry showed that the layer of coal-dust had been formed along the whole length of the wall. Although the dust contained a proportion of pulverized rock, the metal plates heated by the sun had ignited it, the layer of white ash on the top proving that it had burned for a considerable period. This circumstance affords, in addition to fresh proof of the remarkable ease with which coal-dust may be brought to ignition, a possible explanation of fires at similar surface works.

ELECTRIC POWER ON THE MOTHER LODE, CALIFORNIA.

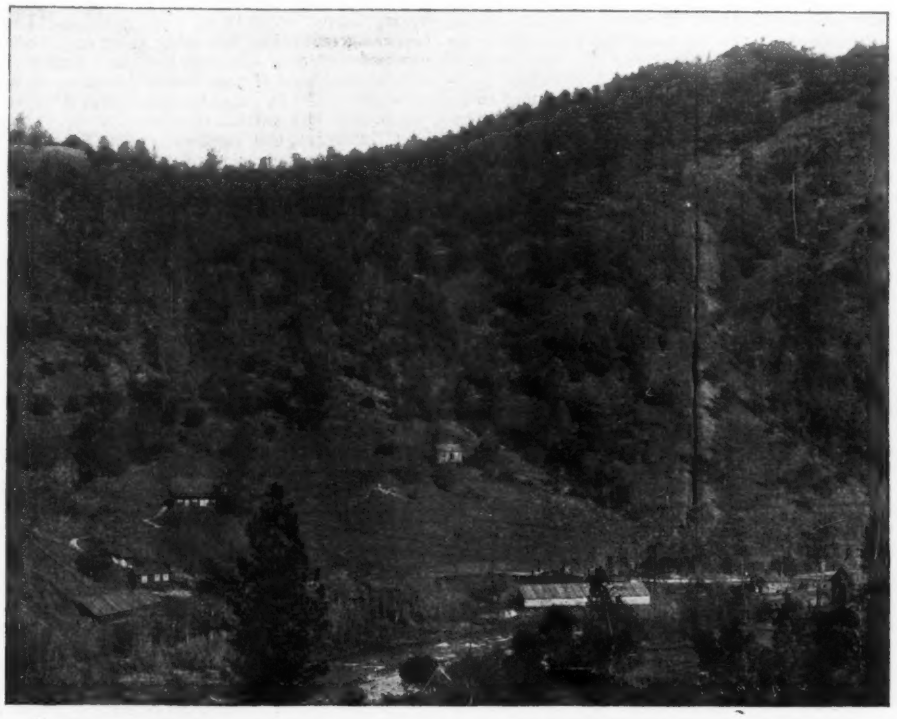
The big electric power plant in course of construction on the Amador side of the Mokelumne River, at Blue Lakes City, will be completed by the end of March. The following facts in relation to this plant are gathered from a recent report of the general manager of the California Exploration Company. The surveys have been made for the power and light line, and poles are being erected and transmission wires laid. The system will embrace 33 miles of mines, from Plymouth, in Amador County, to Altaville, Calaveras County. Already contracts have been made with the California Exploration Company, which controls the power in Calaveras County, to furnish light and power to the towns of San Andreas and Mokelumne Hill, and the adjacent mines. The supply of water needed to generate the power will be taken from the Great Lakes at the summit of the Sierras. It is estimated that, if necessary, 300,000,000 gals. of water per day can be supplied from these lakes. Large reservoirs have been constructed at Slabtown, two miles from Blue Lakes City, and excavating for a trench 3,400 ft. in length for the reception of the power plant pipe line has been completed. This trench has been sunk to the bedrock and in some cases it was necessary to cut into the rock for a depth of 20 ft. The first section of the pipe has been laid in place. As it is laid it is bolted together; it then is secured in a mass of concrete, which method of laying it will be continued for quite a distance up the line. In addition, the trench is filled with good material, well rammed into place about the pipe, so as to amply secure it against any possibility of movement caused by the enormous pressure to which it will be subjected when in operation, as it will have a fall of 1,043 ft. at the power-house, as shown in the illustration, developing 2⅛ H. P. for each miner's inch of water.

This part of the work especially is receiving much care, and no expense spared to make it a substantial and permanent construction. The pipe itself is made of the best material throughout (steel), at the lower end ½ in. in thickness, and is 22 in. in diameter. Every piece is tested at the factory before shipment to double its working pressure. The pipe line construction will be pushed to completion and will be ready within the contract time.

The power-house building is a substantial steel-frame structure 35 × 100 ft. in the clear, containing a 10-ton traveling crane; it is covered with corrugated steel sheeting and lined with asbestos and tar paper to prevent condensation. It is erected on substantial stone foundations, laid in cement mortar and carried down to solid bedrock. This building is now completed and ready for the reception of the hydraulic and electric apparatus.

The preliminary installation of the latter will consist of two 750-K. W. two-phase Stanley generators, one of which has been shipped, while all of the apparatus will leave the factory in March. Commodious camps have been established and a large force of men is at work. Some new and valuable improvements are presented in the water-wheel plant, which will consist of three 800-H. P. wheels of a new type, which are now being manufactured in San Francisco; and the equipment will be ready by the time the generators arrive.

From this power house as a central station power will be supplied to a number of mines owned by the company, as indicated above. The illustrations show the pipe line leading to the power-house at the foot of the mountain and the power-house building in course of construction on the banks of the Mokelumne River.



BLUE LAKES POWER PLANT, CALIFORNIA.

German Coal Trade.—In consequence of the very active demand for coal, the Rhenish-Westphalian Syndicate has removed all restrictions on output of coal from March 1st.

THE TINTIC MINING DISTRICT IN UTAH.

Written for the Engineering and Mining Journal by H. L. J. Warren.

The Tintic District is to-day probably the most prosperous precious metal mining region between the Atlantic and the Pacific, surprising as the statement may appear to many. It is to Utah what Leadville was to Colorado before the strike. During 1896 the ore tonnage, including concentrates, shipped to smelters—121,900 tons—was larger than that from any Colorado or Utah district; dividends of record for the year were $1,055,552. There are no complaints of hard times among miners or business men of Tintic's four towns—Eureka, Mammoth, Robinson and Silver City—while the Rio Grande Western and the Union Pacific state it is the best mining feeder of their roads.

In a large degree this is due to the amicable relations existing between mine owners and miners. A few years ago there was a pending strike, but it failed to come. Prior to that time Mormons rarely worked underground; now 60% of the miners, probably more, are men who three years ago were farming in the valley near by. They are largely men of family, and in brief more quiet, more contented, or better miners are not found anywhere. This change in the force undergound has been quietly going on, until there is not an agitator on the pay rolls, and it will be long before they have a foot-hold again. In consequence of these favorable labor conditions Tintic has come to be looked upon as affording a most desirable field for mining investments, and last year this feature in particular attracted several large operators from Leadville, who have had no reason to complain of their change of base.

This is but one phase of Tintic's prosperity, though an exceedingly interesting one. As the importance of the region is but little known, or appreciated in the mining world, many hardly being more than aware that there is such a district, an outline of a visit among the mines may be interesting.

From Salt Lake City, Tintic is a little west of south, the farthest mines being distant about 65 miles in an air line. Approaching the district by the Rio Grande Western the difference in elevation is 2,032 feet, accomplished in a tortuous distance of 17 miles, of which the "Double Circles" form about a third, where one section of track crosses 90 ft. above the section below. After crossing the summit of the Tintic range, Eureka station is immediately at hand, where the Bullion Beck, Eureka Hill, Gemini and Centennial-Eureka, all reliable dividend payers, furnish constant life and activity. Important exploration is in progress in other near-by properties, but these are the big shippers, the old landmarks, about which it is hardly necessary to say more than that at the lowest horizons where mining is underway the ore zones, in the dolomitic limestones, give no evidence of exhaustion.

The Bullion-Beck shaft is down 900 ft., Gemini 1,200, Eureka Hill 1,500 and Centennial-Eureka 1,550 ft., respectively, with from 12 to over 20 miles of development in each. In 1896 Centennial-Eureka shipped 8,500 tons of smelter product, paid $450,000 in dividends, or $1,920,000 all told. As yet the company has no mill to treat the vast stores of low grades on dump and underground. Below the 1,300-ft. station the gold content has steadily increased, the output for the past few months being from 1 to 3 oz. gold, 50 oz. silver to the ton, with varying percentages of copper and lead. Bullion-Beck sent away 35,200 tons of ore and concentrates last year, distributed $290,000 in dividends, making a total of $2,197,000 paid by the property. This is a silver-lead proposition, the ore running from 40 to 80 ounces silver to the ton, with from 10 to 18% lead. Above the shaft-house, 200 ft. in elevation, is a modern 200-ton contrating mill erected two years ago, its location being necessitated by the contour of the ground. Mill products are elevated from shaft to the top of the mill

over a 700-ft. tram at a cost of 3c. a ton. The plant is composed of a D. Comet and two Dodge crushers, three sets of Cornish rolls grinding to ½-in., six double or 12 single jigs, the middlings from which go to three Bryan mills, where they are ground to 35-mesh, thence to vanners, of which there are 10 Frue and 5 Johnson, the entire handling of material being as nearly automatic as can be devised. Concentrates from jigs and vanners are mixed before shipping. The mill's greatest dimensions are 250 by 175 ft., five stories high; mine and mill employ 230 men. Exploration of virgin ground is steadily advanced by the diamond drill, which is also the case with the Eureka Hill and Centennial-Eureka.

Eureka Hill and Gemini are owned by close corporations, of which John R. Packard is the moving spirit, and no particulars of their doings are made public. The Eureka Hill is credited with a total of $1,675,000 in dividends and Gemini (the old Keystone) has paid over $850,000 in profits to its different owners. In November the Gemini uncovered a new bonanza ore body in the lowest workings, that is said to run well in gold and copper. The 100-stamp Packard mill of the Eureka Hill, like the Bullion-Beck mill, is above the shaft-house and employs the Washoe pan amalgamation treatment. Stamps weigh 900 lbs., have 7½-in. drop, 100 to the minute, mineral passing a 40-mesh to Frue vanners, of which there are 30 of the 6-ft. pattern. About half the total saving is made on the vanners which concentrate five or more tons into one; vanner tailings are carried to amalgamating pans, agitators thence to settling tanks. Mill stuff runs 10 to 20-oz. silver, 0·1 to 0·2 oz. gold to the ton and 3 to 5% lead, caught on the vanners. It is claimed that a metallic recovery of 80 per cent. is effected.

In this carboniferous lime formation, as at Mercur, there is absolutely no moisture. The Eureka Hill Company has an independent pipe line from Homansville, across the range toward the Utah valley, to supply the mill and mine. Eureka town obtains water from the same locality, the pipe line being owned by the Bullion-Beck & Champion Company. Around Homansville, as at Silver City and Diamond, to the south and west, the country rock is porphyry, so called, containing numerous water-bearing seams and fissures. Wells or shafts of considerable depth, with many drifts and cross-cuts, are driven to maintain the supply, so that water-mining is here necessary to operate the metalliferous mines.

In Tintic annals the year 1896 will be memorable for a substantial revival in two portions of the district, one of which was reputed to be worked out—the Silver City and the Diamond section—and the other by the bringing to light of a rich ore zone where the wise men were skeptical. This discovery is the Humbug, on Godiva Mountain, where paying mineral was encountered in August, the first shipments made in October, and by the middle of January the net returns were $110,000. The ore is galena, going well in silver, $10 to $15 in gold, all told worth from $80 to $170; the average of shipments to January was $124 a ton. Last spring Jesse Knight, who, with his sons, are the fortunate owners, tried in vain to dispose first of a quarter and then a half interest for $1,000, to be expended in advancing development. They managed to pull along unaided, and to-day all the neighboring territory is being exploited, while claims are held at high and rapidly advancing figures. Mr. Knight, a few weeks since, paid $25,000 for the Uncle Sam near his bonanza. But this is not the only encouraging item of this locality. The Ajax—the old Copperopolis—after a long rest, due largely to litigation, is again a shipper; the Mammoth—the deepest mine in Utah, 1,700 ft.—has opened new ore bodies. Sioux and Utah are steadily augmenting their outputs. Godiva, Grand Central, Northern Spy, Eagle, Tetro and other undertakings are at work.

Less than three years ago Mammoth Town, a short mile south of Eureka, across the dividing ridge, was almost deserted, and the outlook for the Mammoth Hollow mines was dark. In 1894 but a score or two of men were working for wages, while to-day there are fully 800. Another town—Robinson—a mile away toward the valley, has sprung up, and the two towns have stretched out toward each other till they are practically one. This transformation is primarily due to Mr. George H. Robinson, a mining engineer, formerly in charge of Captain J. R. DeLamar's interests at Mercur, who demonstrated that the Mammoth Mine is a gold proposition, and devises a practical method of winning the values from the low grades. Mr. Robinson started the revival when, sampling an abandoned stope, he found it carried high gold values.

It is now considered a gold mine, all the ore taken out in the past two years going higher in value in gold than in silver. For a long period the metallic extraction in the mill was 86% gold, 10% silver, and copper and lead together 4%, respectively. Last year the Mammoth resumed dividends, having paid in all $1,150,000. The great bulk of the ore now mined is low grade, and two years ago a mill was built, under Mr. Robinson's direction, for treating these products. It is similar to the Packard mill of the Eureka Hill Company, with the addition of plates below the batteries which effect a saving of 30%, mostly gold, of the total extraction. There are 60 stamps, 1,000 lbs. each, 7-in. drop, 105 to the minute, the pulp passing a 35-mesh, thence to vanners, of which there are 36 Frue; the vanner concentrates contain about 30% of savings, the remaining 40% being made by Washoe pans, etc. During the past half year the mill's capacity has been doubled, so that it treats from 200 to 250 tons in 24 hours. Milling stuff runs 8 to 12 oz. silver, 0·4 to 0·8 oz. gold to the ton, with some copper and lead; about 80% saving is achieved. Crushing is now done at the mine, as the heavy machinery made the mill top heavy. The ore is carried to the mill, a mile distant, over the New East Tintic Railroad, which has its terminus at the Mammoth station. Its length is 2¼ miles, grade 6%, motive power one Shay locomotive. The tariff on ore down or on supplies up is 30c. a ton, the daily traffic 250 tons or over. It is proposed the coming season to extend the road around Godiva Mountain, about two miles, to secure the traffic of several mines. The marked success of the Mammoth mill occasioned the erection of the 20-stamp Sioux mill just above it, treating from 40 to 50 tons daily from the Sioux.

At present, in the district, the ore zones are but little understood. Explorations the past 10 months have shown three separate mineralized channels, while Mr. Robinson maintains there are four, and he is engaged in prospecting to demonstrate the truth or falsity of his belief. The Centennial-Eureka is now mining rich mineral on the south side of the summit and the Emerald and Apex are carring on deep exploitation workings for the southern extension of this bonanza channel. There are half a dozen important development projects under way, besides other prospecting enterprises of less moment.

The Tintic Mining District was organized in December, 1869, owing its existence primarily to the discovery of rich silver float and croppings from the Sunbeam lode, near Silver City. For a decade, while silver mining was in fashion, Silver City was a camp of consequence, and some $3,000,000 was produced from a score or more mines during this first era. The veins are north and south fissures in a porphyritic rock to the south and west of the lime formation. Silver City is as far from Mammoth Hollow as Mammoth is distant from Eureka. When mining reached the limits of the oxidized ore, at depths varying from 200 to 300 ft., a sterile white iron cap was encountered in each instance, and the properties were abandoned, as of no further value. Silver City became deserted, stores and houses dismantled, and a year ago there were but a dozen or so inhabitants, and the single industry of its joint railroad station was the shipping of three to six cars of hematite from the Black Dragon mine to smelters for slagging off silica. For years the notion that paying ore could be found below the barren sulphides had been getting more and more into favor, and the honor of proving the truth of this idea remained for the Swansea promoters, when, in March, 1896, at a depth of 350 ft. a profitable galena ore chute with good silver values was broken into. An approach to a boom was experienced last summer and fall as this locality awoke.

In place of a dozen men at work there are now about 300 men on the pay-rolls around Silver City and Diamond, besides those in other employments, and the forecast is rosy that this growth will continue.

This fissure vein region is less mountainous than the lime area, composed of numerous valley pockets partly enclosed by small hills and low ridges. Unlike the mines in limestone, those of this section are constantly striking water.

Since finding ore the Swansea shaft has been sunk to 700 ft., the company has paid five monthly dividends of $5,000, and substantial reserves are blocked out. The vein is nearly vertical, strike north and south, varies from 2 to 10 ft. in thickness, and has been proven for 3,000 ft. Generally speaking, the other veins are of about the same dimensions and character of ore. Next to the fine surface plant of the Swansea is the new shaft-house of the South Swansea on the same vein, deepest workings about 300 ft. In December the first considerable shipments were made, and the initial dividend of $7,500 was declared in that month. The Sunbeam, the earliest Tintic bonanza, has its main shaft 350 ft. deep, and is better than paying expenses. Yankee Girl, Four Aces, Silver Bow, Primrose and Tesora are other old mines reopened. There are also a dozen entirely new prospecting enterprises being actively pushed.

The Tintic District is a regular producer of the principal metals, shipments of ores of gold, silver, copper, lead and iron being daily made from its several railroad points. No review of this region can omit mentioning the Black Dragon, or Dragon Iron mine, a mile east of Silver City. It is a huge bedded deposit of hematite over 100 ft. thick, which is quarried as a flux for the Utah smelters. The bed is opened by a tunnel through which wagons drive, turn around and load. From 100 to 130 tons are shipped daily. Another portion of this claim has a silver-lead mine where a discovery was made in the closing days of last year. There are several more strong iron beds, at least one of which is mined, the others being of no immediate economic importance.

Around Diamond the Homestake has recently occasioned a lively interest by several carload shipments of black copper oxide—melaconite—carrying gold and silver. This is another mine long ago looked on as worked out. Still another of the old producers is the Morning Glory, which will be a shipper the present season. The Buckeye is in ore, while on the Eva and Showers group systematic exploration is in progress. Late in December there were six new shaft-houses being built and numerous evidences of serious prospecting to be seen on all sides.

To estimate the production of the district in 1896, it is necessary to deduct from the 121,900 tons shipped, as given in the opening paragraph of this article, 17,560 tons of hematite shipped for fluxing, leaving 104,340 tons, which at $55, the estimated value, is $5,738,700, and adding $350,000 for the yield of the mills, gives $6,088,700 as the total value of the metals produced. This is as conservative an estimate as can be made from the data at hand. On the dividend account or, rather, the net earnings of the mines, the figures of record, $1,055,552, are below the truth, as in several instances considerable sums were expended in purchasing additional property and in improvements other than development. Besides, it is well to bear in mind that when returns of mine profits are made up for purposes of taxation, as required in Utah, generous salaries and incidentals are allowed, not only by incorporated companies, but also in the cases of mines owned by individuals and private partnerships.

Pelton Water Wheels in the East.—The Pelton Water Wheel Company of San Francisco has shown much enterprise and met with much success in reaching out after foreign trade. There are few countries open to travel where Pelton wheels may not be found transmuting water falls into power for electric lighting and all the manifold uses of power. One of the means by which this result has been accomplished is that of having a corps of skilled engineers constantly in the field, planning and installing works wherever such service is required in any part of the world. One of the company's engineers, with native assistants, lately completed a survey for a large power station in the Malay Peninsula, not far from Singapore, the plant being for the purpose of supplying several large towns with power and light by means of electric transmission. In addition to this work the company has recently shipped a number of wheels to Japan, as also three wheel plants to other parts of the East Indies, including pipe lines and all appliances connected therewith; the former were mostly for electric lighting and the latter for running the machinery of sugar, tea and coffee plantations, as well as furnishing light. The advantages of water power where it can be availed of by such simple and comparatively inexpensive means are coming to be better appreciated and understood the world over. With electricity as a medium of transmission there are few localities that cannot make use of the economies that such a power affords.

THE FLEUSS BREATHING APPARATUS FOR USE IN MINES.

By George H. Winstanley.

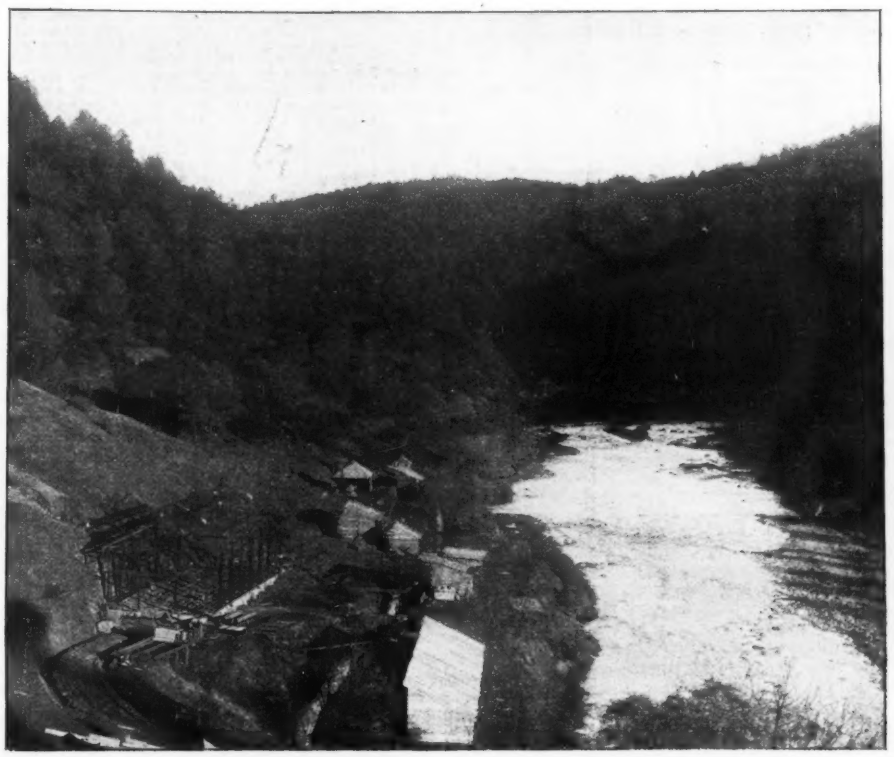
In a paper read recently before the Manchester Geological Society, Mr. Winstanley referred to this device for use as a protection against gas in collieries. It is not new, but has so far been applied only in a few places. The apparatus is based on the fact that, to permit healthy respiration, two things are essential. First, there must be some means of maintaining a supply of oxygen, and, secondly, some means of removing the excess of carbon dioxide. In the Fleuss apparatus, the necessary conditions are brought about in the manner now to be described.

The original apparatus consisted of a mask to cover the face, a copper cylinder containing a supply of oxygen gas under pressure, a rubber bag worn in front and called the breathing bag, and the carbonic acid gas filter, together with the necessary tubes connecting the different parts, and the straps for carrying. The carbonic acid filter in the original apparatus took the form of a rectangular box strapped to the back. Internally the box was divided into vertical compartments, each filled with tow impregnated with caustic soda. Up and down these compartments the exhaled breath was made to pass, and in this way was freed from its carbon dioxide. Caustic soda has the property of actively combining with this gas, forming carbonate of soda. This arrangement was, in fact, quite useless in any but a mine where the roads were uniformly high, and where no small places had to be passed through. In the present form of the appliance, however, this has been dispensed with entirely, and the caustic soda, in the form of sticks, is placed in the breathing bag. The mask is made in two forms; one simply covers the nose and mouth, and would be generally used in mining; the other also covers the eyes, and would be used in smoke or fumes injurious to the eyes. In both cases the mask fits closely to the face, and is provided with two corrugated rubber tubes, one being the tube for inspiration and the other for the exhaled breath; each tube is provided with an exceedingly simple valve which responds to the very feeblest efforts of breathing. The mask is connected with the breathing bag by means of corrugated tubes; the bag is of good rubber, and is worn in front, occupying very little space. Internally the bag is divided into two compartments, in each of which 2 lbs. of stick caustic soda is placed when the apparatus is to be used. It is in connection with the oxygen vessel that the writer has attempted to make some further improvements, by reducing the weight and bulk of the apparatus as well as increasing its utility as a life-saving appliance. The oxygen cylinder supplied with the Siebe-Gorman apparatus is made of copper and measures 6 in. in diameter and 15 in. long over all; charged with gas and including the carrying straps its weight is over 20 lbs. and at a pressure of about 400 lbs. to the square inch it contains oxygen equal to about 4 cu. ft., a quantity sufficient to last for three or four hours' breathing. The total weight of the apparatus with the copper cylinder all ready for use is 30 lbs., and the cost about $65 per complete set.

To use the apparatus the cylinder is first strapped to the back by means of the belt and shoulder straps, next the bag is placed in position in front, charged with 4 lbs. of caustic soda. The small rubber tube from the valve of the oxygen cylinder is connected with the corrugated inspiration tube; both the corrugated tubes are connected to the mask and to the bag, and the mask slung round the neck in readiness to be adjusted. The person then enters the mine and advances until the atmosphere shows signs of being impure, when he adjusts the mask, at the same time turning the oxygen valve to admit oxygen to the bag; this valve is closed again as soon as the bag is sufficiently distended. Breathing then proceeds naturally, the air is drawn into the lungs, the oxygen converted into carbonic acid, which is exhaled into the bag together with the unaltered nitrogen. The carbonic acid coming in contact with the caustic soda is absorbed by it, and in this way the breathing continues until the bag begins to show signs of getting flabby from loss of oxygen; more of the latter is then admitted, this being necessary about once every 10 minutes. The oxygen is not admitted in a continuous stream, but intermittently; the idea is to keep the bag distended between a certain minimum and maximum, when the proportion of oxygen present will be such as to properly sustain breathing. It, perhaps, ought to be remarked at this point that the atmosphere which the person breathes consists of oxygen and nitrogen, in which the former is always slightly in excess of the proportion which is present in the normal atmosphere, and its proportion is not constant, but varies; when first oxygen is admitted, and the bag distended to the maximum extent, the percentage of oxygen breathed is above that in the normal atmosphere, and this gradually diminishes until the proportion is just above normal; when more oxygen is admitted. The breathing of this slightly excess quantity of oxygen is not harmful or dangerous.

Even in its present form the appliance is still too heavy and too bulky for use in mines where the roadways are small. The use of a steel cylinder much reduces the weight. The steel cylinder contains a quantity of oxygen equal to 6 cu. ft., of course at a higher pressure; its weight is slightly over 10 lbs., and it measures 4 in. in diameter and 13 in. long over all. That is, with one-half the weight of the copper cylinder we have 50% more oxygen. It is not suggested that this larger supply will enable a man to use the apparatus for longer periods, but the excess might very possibly be of great value for the purpose of restoring animation and saving life. Dr. Haldane states that the best remedy in the event of carbon-monoxide poisoning is the administration of pure oxygen. A steel cylinder of 6 cu. ft. capacity might be provided with an additional valve and a short piece of rubber tube, and by this means the additional supply of oxygen could be applied for the purpose named and the Fleuss as a life-saving appliance would thereby be considerably increased in value.

An atmosphere in which it is necessary to use the Fleuss apparatus will not permit of an ordinary safety lamp being used. Mr. Fleuss overcame this difficulty by providing a lamp which carries its own oxygen supply. Without going into the details, it is sufficient to say that it was unsuitable for use in a mine, being very heavy and very bulky. The writer has for some time used an electric safety lamp, which could be used in connection with the Fleuss apparatus. It consists of a small six-cell accumulator, made by the Bristol Electric Safety Lamp Works, which may be attached to the belt or shoulder strap of the apparatus. A short piece of twin flexible wire connects the poles of the battery with a small incandescent lamp. It gives a light equal to four of the best ordinary safety lamps for a period of five or six hours; the light is well distributed on both sides, on the roof and floor, as well as in front. There is no heat from the lamp, and in weight it is just about equal to the average Marsaut, but it has the great advantage that both hands are left free.



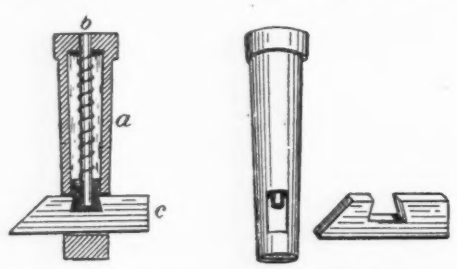
BLUE LAKES POWER PLANT, CALIFORNIA.

Railroads in Hungary.—According to the Hungarian *Statistical Year Book*, there were 8,650 miles of railroad in Hungary in 1895, against only 1,340 miles in 1866. The income from the roads was $51,800,000 in 1894, against $39,270,000 in 1888. In 1894 the total number of passengers carried was 49,578,000, against 18,990,000 in 1889. The freight transported in 1894 amounted to 40,758,000 tons, or 5,072 tons per mile, against 23,970,000 tons, and 3,600 tons per mile, in 1889.

A MAGNET LOCK FOR MINERS' SAFETY LAMPS.

It is well understood that the locks of miners' safety lamps should be so constructed that the oil-receiver with the burning flame cannot be loosened from the upper part at will. Of the great number of appliances proposed, magnet locks appear to have been most successful, but even these leave something to be desired. The magnet lock best known is one in which the lock in the screw ring of the upper part of the lamp is in the form of a steel anchor, which is pressed by a spring in recesses of the screw of the lamp bottom. Although magnet locks are a great improvement upon the lead plugs and screw keys, they have still the disadvantage that the miner by knocking the lamp and rubbing with coal dust which he has introduced between the screw or by boring a small hole through the screw ring, is able to open and shut the lamp.

The accompanying illustration shows a magnet lock devised by Richard Cremer, of Leeds, England, which is simple, and which has the advantage that it can be readily applied to lamps which are now locked with lead rivets. Fig. 1 shows the lock in section when shut; Fig. 2 is a view of the apparatus when opened. The apparatus consists of a brass pin, *a*, which is inserted through the hole of the staple instead of the lead plug. The pin is tapered or provided with an enlarged end or head, so that it cannot be drawn completely through the hole of the staple. Near the opposite smaller end of the pin a slot is made. A key, *c*, is inserted, so that while the key is held in place the pin cannot be withdrawn. In order to hold the key in position it is provided on the side or edge toward the larger end of the pin with a notch. The interior of the pin is made hollow and a steel bolt, *b*, fitted in it. This bolt is secured or attached to a spiral spring surrounding it, and lying in the interior of the pin. The spring constantly tends to force the bolt down, so that the end of the bolt shoots into the notch of the key immediately the latter is pushed far enough into the hole. One or both ends of the key are beveled so as to force back the bolt and to allow it



MAGNET LOCK FOR MINERS' SAFETY LAMPS.

to pass into the slot. The withdrawal of the bolt against the pressure of the spring in order to unlock the lamp (to first withdraw the key and then the pin) is only possible by means of a powerful magnet. The lamps may be opened and shut with great facility.

A Single-Rail Tramway.—M. Cailletet, a French engineer, has recently devised a cheap single-rail tramway for light traffic, which can be easily removed from place to place. The permanent way of this system consists of a single flat-footed rail of very light section, to which are attached at short intervals flat soleplates or sleepers, in each side of which holes are formed for the passage of a pin that can be driven into the ground to hold them in place; the rail joints are made by fishplates surrounding the base of the rail. The vehicles running upon this rail are of various forms, according to the service for which they are required; they may be flat platform wagons or small omnibuses, ambulances or box wagons. For the most part they are supported on four wheels, the tires of which are grooved to fit the contour of the rail: these wheels, which run in bearings on the underframe of the vehicle, may either extend beyond it at each end, or be placed beneath the body of the carriage. Obviously such a vehicle, especially when loaded, could not be maintained in equilibrium, and it is in overcoming this difficulty that the invention of M. Cailletet chiefly consists. Projecting from one side of the vehicle are two rods, or a light frame, the former being required when only manual labor is employed, the latter when horse-power is used for propelling the vehicle. Assuming that the carriage could be so accurately loaded that its balance upon the rail would be perfect, it is clear that no effort, except that required for propelling the carriage, would have to be exerted either by men or animals; but although this is practically impossible, the load can nevertheless be so evenly distributed as to call for but a small effort to overcome the tendency to fall in either direction, so that practically the only work that has to be done is that due to overcoming tractive resistances, which are insignificant upon the rail as compared with those upon a road.

Photography in Natural Colors.—According to a recent article in the London *Times*, a decided advance has been made in color photography, and one which appears to give results of great practical value. M. Villedieu Chassagne, of Paris, has lately submitted to the Society of Arts a process, the joint invention of himself and Dr. Adrien Michel Dansac, by which photographs can be produced showing the actual colors of the objects photographed. The process is a simple and inexpensive one. A negative is taken on a gelatine plate, which has been treated with a solution of certain salts; the nature of the solutions used is for the present kept secret. The negative is developed and fixed in the ordinary way, and when finished looks like any other negative. From it a positive is printed on sensitized paper or on a gelatine film (if a transparency is desired), plate or paper having previously been treated with the unknown solution. The positive looks exactly like an ordinary photographic print or transparency, and shows no trace of color. It is then washed over with three colored solutions, blue, green and red, and it takes up in succession the appropriate color in the appropriate parts, the combinations of the colors giving all varities of tint. Thus, in a landscape the trees take on various hues of green, the sky becomes blue, the flowers show their proper colors, the bricks and tiles of the houses are red, and so on. In a portrait the flesh tints come out well, and the different colors of the costume are accurately given. The general appearance of the picture is that of a colored photograph. Looked at from a distance it would be taken for one. Inspected under a high magnifying power it is seen that the colors follow the details in a manner hardly possible for hand-work. Further and independent investigation will no doubt throw some light on the principles involved. At present no explanation can be offered. The inventor himself does not profess to offer any, and until further information is available, all speculation must be mere guess-work. It is to be said, however, that the subject certainly looks as if it would repay scientific examination and increase scientific knowledge.

PATENTS RELATING TO MINING AND METALLURGY.

United States.

The following is a list of the patents relating to mining, metallurgy and kindred subjects issued by the United States Patent Office. A copy of the specifications of any of these will be mailed by the Scientific Publishing Company upon receipt of 25 cents.

WEEK ENDING FEBRUARY 23D, 1897.

577,493. ELECTRIC FURNACE. Francis J. Patten, New York, N. Y. An electric smelting furnace containing a central carbon core constituting one electrode of the furnace, having numerous pencils of carbon radiating from it, the outer extremities being connected to independent loads.

577,505. GOLD AMALGAMATING MACHINE. John R. Brown, Harrison Hot Springs, Canada. The combination of a plate amalgamator comprising an outer cylinder, a central shaft carrying the spiral coil, and a series of curved plates supported in the spaces between the coils of the spiral.

577,523. PROCESS OF MANUFACTURING OZONE AND BY-PRODUCTS. Gustaf J. Anderson and Julius C. Dittrich, Brooklyn, N. Y. Assignors to the Ozone Company, same place and New York, N. Y. The process consists in first freeing the air from carbon dioxide and then drying the same, then ozonizing the oxygen of the air into ozone and oxidizing simultaneously the nitrogen of the same into nitrous oxide by electrical currents of high tension

576,568. COMPRESSING OR BLOWING ENGINE. Asa A. Weimer, Lebanon, Pa. The patent relates to the special form of the receiving and discharge valves.

577,606. PRODUCTION OF STEAM FOR USE IN GAS-PRODUCERS. Ludwig Mond, Northwich, England. The process consists in gasifying fuel by partial combustion with a mixture of hot air and steam, separating the ammonia, using the heat of the partial combustion to heat the mixture of air and steam, utilizing the gas by explosion or combustion for motive power and passing the hot exhaust-gases alternately with water and the mixture of hot air and steam through a regenerator.

577,630. MINERAL SEPARATOR. William Snee and John A. Snee, West Elizabeth, Pa. The combination of a double hopper-shaped tank and an agitator.

577,705. ORE SEPARATOR AND CONCENTRATOR. John O. Anderson, Lead, S. Dak. The combination of a box-shaped trap through which the ore is passed, with a series of amalgamated copper plates.

577,706. ACETYLENE-GAS GENERATOR. Guy S. Archer and Charles F. Burrington, Cherokee, Ia. The combination of a tank adapted to contain water, a holder adapted to fall and rise in the water, a receptacle carried by the holder and having a perforated bottom capable of supporting calcium carbide and a weighted door pivoted on the lower end of the receptacle, to open and close the same.

577,711. ORE CONCENTRATOR. Harrison T. Benson, Denver, Colo. The combination of a rocking frame and tanks with movable gates.

577,787. MEANS FOR ABSTRACTING PRECIOUS METALS FROM ORES. John P. Schmitz, San Francisco, Cal. A cylindrical amalgamator, fitted with revolving plates.

577,802. PROCESS OF AND APPARATUS FOR TREATING ARSENIC ORES. Gustaf M. Westman, New York, N. Y. The process consists in melting arsenic ore by means of an electric current, one of the electrodes in the circuit being a stratum of lead, beneath the ore, with which the precious metals unite while molten, and second, condensing the arsenical vapors given off from the ore while melted, simultaneously with the precipitation and union of the precious metals with the lead.

577,803. PROCESS OF PRODUCING AND CONSUMING HYDROCARBON GAS. Thomas L. Willson, New York, N. Y. Assignor to the Electro-Gas Company, of West Virginia. The process consists in producing acetylene gas, collecting the resulting gas and allowing it to expand into a suitable receptacle and forcing a small stream of the gas through a burner.

577,811. REMOVABLE PLUG FOR OIL WELLS. George P. Tadder, Millerstown, Pa. A tubular plug with conical head.

577,812. APPLIANCE FOR UNSCREWING CASINGS DOWN IN OIL-WELLS. George P. Tadder, Millerstown, Pa. A plug with tapered head and wickers having teeth to catch the casing thread.

577,817. PROCESS OR METHOD OF WELDING COPPER UPON STEEL OR WELDING COPPER UPON IRON. James Burns, Verona, Pa. The process consists in applying a mixture of oxide of copper and powdered alkali between the contact-surfaces of the plates on masses of the metals and compressing them under the influence of heat.

577,825. APPARATUS FOR TREATING ORES. John H. McCoy, Ouray, Colo. The patent covers the use of an air blast forced through the ground ore or pulp for the purpose of keeping it in agitation.

Great Britain.

The following is a list of patents published by the British Patent Office on subjects connected with mining and metallurgy:

WEEK ENDING JANUARY 30TH, 1897.

1,316 of 1896. C. J. L. Otto, Dresden, Germany. Furnace for producing iron as well as extracting precious metals from pyritic ores.

1,673 and 1,674 of 1896. R. & W. C. Stephens, Carnbrea. Improvements in rock drills described in patent No. 2,053 of 1890.

2,482 of 1896. W. C. Blackett and H. Palmer, Durham. Ore separator and coal washer consisting of inclined revolving shell having internal fixed conveyor of increasing depth from inlet to outlet, the inclination being adjustable.

2,858 of 1896. J. P. Fullerton and A. B. K. Church, London. Alloy for piping, composed of 91% lead, 1% copper, 1% bismuth and 7% antimony.

4,083 of 1896. J. McCulloch, Portreath. Device for packing the spindles of rock drills.

5,184 of 1896. G. P. Lewis and F. C. Cripps, London. Means for recovering cyanides from waste products at gas and iron works.

5,226 of 1896. J. Barrett. Bengley. Improvements in undercutting mechanism in coal cutters.

5,278 of 1896. C. W. Atkinson, London. Improvements in coal cutters.

25,963 of 1896. D. Embleton, Leeds. Arrangement of stamps for dry crushing.

PERSONAL.

MR. M. DUSSELDORF, manager of the Comstock mine at Park City, Utah, has gone to New York on business connected with the mine.

BARON G DE BELLESCIZE, of Belgium, one of the owners of the Carpenter group of mines at Tolifaro, Colo., has been in that camp recently.

MR. A. J. COLQUHOUN, formerly at Los Angeles, Cal., is inquired for. Can any of our readers send his present address to this office? There is a communication here for him.

MR. W. H. ADAMS, mining engineer, starts this week for a tour of the several mining districts in the Southern States. He will also inspect the newer phosphate fields of Tennessee.

MR. W. B. JEFFREY, mining engineer, of London, is now in Los Angeles, Cal., having examined gold-mining properties in several of the Western States and in British Columbia during the past four months.

MR. H. H. HAYES, of the firm of J. Pierpont Morgan & Company, of Paris, a large holder of stock of the Chicago & Cripple Creek Tunnel Company at Cripple Creek, Colo., spent several days in that camp recently.

MR. WILLIAM GARRETT has severed his connection with the Illinois Steel Company and will engage in the rolling mill engineering business in Cleveland. He will design and improve all kinds of rolling mills.

MR. E. P. JENNINGS, formerly of Ironwood, Mich., who recently went to Idaho on professional business, is being inquired for, and any of our readers who can furnish his address will do us a favor by forwarding it to this office.

MR. JAMES HUTCHINSON, manager of the Trade Dollar Mining Company's properties at Silver City, Idaho, is taking an extensive trip to the East for the benefit of his health. He will spend some time in Pittsburg and New York.

MR. FREDERICK L. GRAMMAR, superintendent of the Lackawanna Iron and Steel Company's Colebrook furnaces, at Lebanon, Pa., has accepted the position of superintendent of the Carnegie Steel Company's furnace plant, at Duquesne.

MR. JAS. PURVIS, lately connected with Spang, Chalfant & Company, Pittsburg, Pa., in the basic open-hearth department, has accepted a position as superintendent of the open-hearth department of the Buhl Steel Company, of Sharon, Pa.

MR. REESE TASKER has been appointed division superintendent of the Mahanoy Division of the Philadelphia & Reading Coal and Iron Company, vice MR. JOHN SKEATH, resigned. MR. JAMES MCDONALD, inside foreman at Maple Hill colliery, succeeds Mr. Tasker as district superintendent.

DR. WM. B. PHILLIPS has opened an office at 311 Chalifoux Building, Birmingham, Ala., as consulting chemist and mining engineer for the examination of mining property, reporting on technical processes, such as coal washing, saving of waste products, etc., and the promotion of legitimate industrial enterprises. He has had an experience of 20 years with all kinds of mining property, and for the last several years has been consulting chemist for the Tennessee Coal, Iron and Railway Company.

MR. E. DOSWELL, for many years in direct charge of construction at the Beckett Foundry Machine Works, Arlington N. J., is now located at Ixola Falls, 16 miles from Jalapa, Mex., installing the pipe line and Pelton wheels for a power plant to light the cities of Jalapa and Coatèpec, also for operating the first electric railroad in the country, which extends to Cordova. The installation will eventually include 1,200 H. P. derived from three pairs of wheels under 250-ft. head, and calls for very careful engineering owing to local conditions.

MR. CHARLES M. JARVIS, who has been chief engineer of the Berlin Iron Bridge Company, of East Berlin, Conn., since its organization, has been obliged by the increasing business to resign to others the engineering department, and give his entire time and attention to the business management of the corporation. The directors have, therefore, appointed to the position of chief engineer MR. JAS. H. EDWARDS, a graduate ofCornell University, who has been with the company a number of years, during which time he has been the chief assistant to Mr. Jarvis. Mr. Edwards is by education and experience well qualified for his new and important position.

OBITUARY.

JOHN MILNES, said to have been the oldest in point of service of the coal commission men in Philadelphia, died February 28th of pneumonia. He was born in 1832 in Pottsville and for a while was interested with his father and uncle, William Milnes, in the operation of the Hickory Colliery, but during the last 30 years has been in the coal commission business in Philadelphia.

SOCIETIES AND TECHNICAL SCHOOLS.

NEW YORK SECTION OF THE AMERICAN CHEMICAL SOCIETY.—At the meeting held on March 5th, the following papers were read: J. H. Wainwright, "Note on the Volumetric Estimation of Lead"; W. M, Grosvenor, Jr., "Electrolytic Production of Alkali Nitrites"; Gillette Wynkoop, "Quantitative Separations with Sodium Nitrite."

CIVIL ENGINEERS' CLUB OF CLEVELAND, OHIO.—A semi-monthly meeting was held in the Case Library Building on February 23d. Dr. Cady Staley, President of the Case School of Applied Science, presented a paper upon "The Sanitation of Paris"; its water supply, street cleaning, sewers and sewage disposal, the sewage farm at Genevilliers.

NEW YORK ACADEMY OF SCIENCES.—The section of Geology and Mineralogy will meet on March 15th, for which occasion the following programme is announced: H. Reis, "Mineralogical Notes"; Herbert Bolton, "The Lancashire Coal Field of England" (to be read by President Stevenson); Stuart Weller, "The Batesville Sandstone of Arkansas" (abstract by Gilbert Van Ingen); election of officers of the section for 1897-98.

FOUNDRYMEN'S ASSOCIATION.—A stated meeting was held at the Philadelphia Commercial Museum March 3d at the invitation of Director Wilson, in order that the members might have an opportunity of inspecting the commercial collections of the institution. Under the guidance of Dr. Wilson a careful examination was made of the samples illustrating the exports of castings by foreign countries, and a full explanation was given of facilities possessed by the institution for furnishing prices and other data concerning foreign markets. At the meeting, which was held in the lecture-room, a report was read from the executive committee urging the importance of increasing the export of castings to foreign markets in consequence of the fact that the home trade is being restricted by the use of pressed steel and malleable iron for the construction of many things formerly made of cast iron. A paper was read by Guy R. Johnson, of Embreeville, Tenn., entitled "Chemical Hints to Foundrymen," in which he described the methods of ascertaining the quality of iron by means of chemical tests.

INDUSTRIAL NOTES.

The Riverside Iron Works, of Wheeling, W. Va., it is reported, will erect a tin mill.

The Reading, Pa., Foundry and Machine Company started its plant March 1st, giving employment to about 50 men.

The Sloss Iron and Steel Company, of Birmingham, Ala., is making general improvements to its No. 2 and No. 3 furnaces.

The West Virginia Metallic Paint Company, of Keyser, is about to resume operations and will make a greater variety of paints.

The Jas. Sweeney Copper and Brass Works have been incorporated by Jas. Sweeney and others of St. Louis, Mo., with a capital stock of $50,000.

The Fairchild Chemical Laboratory Company, with a capital stock of $5,000, has been incorporated by H. C. L. Luyties and others of St. Louis, Mo.

The Watts Steel and Iron Company, of Middlesborough, Ky., will, it is reported, put both furnaces and the steel plant in full operation about April 1st.

The Maryland Steel Company has cut wages 10 per cent. at its Sparrow's Point works near Baltimore. The bridge shop force has been reduced and preparations to start furnace B stopped.

The Union steel plant at Alexandria, Ind., has resumed operations in three departments and the whole plant will be in operation at an early date. It employs 1,600 men when running full capacity.

The Pennsylvania Steel Company has started its No. 1 furnace at Steelton on spiegel after a long run on Bessemer iron. This furnace is the only one of the company's five stacks at Steelton and Harrisburg that is in operation.

The Bethlehem (Pa.) Iron Company, has given notice of a general reduction of 10% in the wages of employees, to take effect March 1st. This reduction will not apply, until further notice, to skilled labor or mechanics in the open hearth or forging departments, the plate mill, or in machine shops Nos. 1, 2 and 3.

The Eastern Lime Company, which is composed of Uniontown, Pa., capitalists who have purchased a tract of land near Greensburg, has now in course of erection a large lime manufacturing plant. The contract for the erection of the furnaces has been awarded to George W. Good & Company, of Greensburg, and work has been begun. Limestone found east of the Allegheny Mountains will be used exclusively.

The American Engine Company, of Bound Brook, N. J., has just secured the order for the entire engine equipment of the new station of the Scranton Illuminating, Heat & Power Company, to be built on the site of the old station recently destroyed by fire. The equipment will consist of six American Ball engines, five of which will be compound and one simple. Direct-connected generators will be use on four of these engines, and the station will be modern in all its appointments.

Henry R. Worthington, manufacturer of steam and electric pumping machinery, has recently received a contract from the Newport News Shipbuilding and Dry Dock Company, amounting to $100,000, covering pumps for the United States battleships *Kearsarge*, *Kentucky* and *Illinois*. They are also building the pumps and pumping machinery for the United States battleship *Alabama*, now being constructed by the Wm. Cramp & Sons Ship and Engine Building Company. The contract for the pumps for this vessel amounts to $33,000. The company has just completed and delivered the hydraulic machinery for operating the turrets on the United States battleship *Iowa*. It has more recently received a contract amounting to $15,000, covering the pumps required for the armored cruiser being built by the Cramp Company for the Japanese government. The *Yoshi-Ho*, another Japanese cruiser, is already fitted out with a full complement of Worthington pumps. It is a fact that, with few exceptions, all foreign war vessels are equipped with these machines, showing the efficiency of the Worthington duplex steam pump.

TRADE CATALOGUES.

Henry R. Worthington, New York, has published a special catalogue describing the Worthington cooling tower, which is designed for the removal or absorption of large quantities of heat generated during any process. The condensation of steam from steam engines to get the economical effect of vacuum, and the condensation of ammonia in connection with refrigerating plants, require the absorption of vast quantities of heat, ordinarily accomplished by the use of large volumes of cold water which run to waste after being heated. The cooling of the condensing water avoids its waste and allows its continuous use at the nominal expense of circulation over the condenser and cooling apparatus. This is effected by the Washington cooling tower.

MACHINERY AND SUPPLIES WANTED.

If any one wanting machinery or supplies of any kind will notify the *Engineering and Mining Journal* of what he needs he will be put in communication with the best manufacturers of the same.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning goods of any kind, and forward them catalogues and discounts of manufactures in each line.

All these services are rendered gratuitously in the interest of our subscribers and advertisers; the proprietors of the *Engineering and Mining Journal* are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

GENERAL MINING NEWS.

ALABAMA.

DALLAS COUNTY.

ALABAMA RIVER BARGE LINE AND RAILROAD COMPANY.—A bill has been introduced in the legislature to incorporate this company for the purpose of operating a barge line from the Cahaba coalfields to Mobile. The incorporators are E. C. Nachen, John J. Sheppard, B. S. Bibb, W. H. Tinsdale and W. M. Vaughn. Capital stock is $100,000.

ALASKA.

ALASKA GOLD SYNDICATE COMPANY.—At the annual meeting in New York, March 3d, the following officers were chosen: President, E. H. Denslow; vice-president, Charles R. Bissell; secretary, Fleetwood Ward; directors, Reuben Leland, W. H. Reynolds, Benjamin Russell, Edward E. Scovill.

FUNTER BAY PROPERTY.—Dick Johnson is sinking a shaft at Funter Bay, which has already attained a depth of 35 ft., and is about 6 ft. above high-water mark. The lode comes to the surface and shows for a distance of 500 ft. At the bottom of the shaft the vein is free-milling and about 15 in. wide. The property is about 300 ft. in a northwesterly direction from the Boston & Alaska Gold Mining Company's mill.

ARIZONA.

PIMA COUNTY.

COMMONWEALTH MINING COMPANY.—The Pierce mine, situated northeast of Tucson, was sold to this company for $275,000 as a prospect. It is reported that in developing to the 200-ft. level the shipments of the high-grade ores paid for the mine and enough ore carrying $25 in gold to the ton was placed on the dump to pay for all machinery necessary to treat 150 tons a day. The ledge is about 30 ft. wide. The mill for this mine is now en route from San Francisco.

PINAL COUNTY.

MAMMOTH.—This mine, at Mammoth, with ledge measuring 37 ft. in width, has a working shaft down 600 ft. Its mill has 50 stamps, and its ores are said to carry $9 in gold.

YUMA COUNTY.

FORTUNA.—This property is owned by C. D. Lane, who bonded it for $150,000. It is equipped with a 20-stamp mill. The December output reached the sum of $94,300. Its ledge is 18 ft. in width at the 400-ft. level, being 12 ft. on the surface. The stamps are very heavy, weighing 1,350 lbs. and crush four tons a day each.

CALIFORNIA.

CALIFORNIA DEBRIS COMMISSION.—Permits have been issued to A. F. Roberts, of Forbestown, Butte County, to mine in Roberts & Company's mine near Forbestown, and to Gray & Taylor for the Sugarloaf mine at Colfax, Placer County. The owners of the Tippecanoe mine at Camptonville, Yuba County, and of the Kentucky Slab mine, at Kentucky Flat, El Dorado County, were authorized to reopen their mines, which have been shut down for some time on accounts of floods.

EL DORADO COUNTY.

(From Our Special Correspondent.)

DARLING.—This mine, east of Georgetown, which has lain idle for some time, is reported to have been sold to Juan D. Alvarado, of London, for $40,000. The property has been developed to a depth of 200 ft. A good hoisting and milling plant is on the ground.

EAGLE KING.—At this mine, 2½ miles north of Grizzly Flat, a 4-ft. ledge of high-grade ore has been cut at a depth of 265 ft.

MARIPOSA COUNTY.

(From Our Special Correspondent.)

YELLOWSTONE SIROCCO.—The main shaft at this mine, 1½ miles west of Bear Valley, is down 420 ft. and has a new shaft at the west end of the claim down 70 ft. Good ore is being taken out of both shafts.

PLACER COUNTY.

(From Our Special Correspondent.)

BLACK HAWK GRAVEL MINING COMPANY.—This company has been incorporated with C. H. Crocker, H. B. Brewer, Henry O. Wiedero and J. W. Roach as directors. The property three miles north of Forest Hill is being worked by tunnel run from Black Hawk Canyon.

PIONEER.—At this mine, 1 mile northwest of Damascus, sixty men are employed and the mill is running night and day. Over 10 ft. per day is being made with the power drills in tunnel No. 4, which is now in 2,200 ft. The vein will be reached in about 500 ft. more.

SAILOR CONSOLIDATED MINING COMPANY.—The group of mines owned by this company, consisting of the Sailor, Sally, Alma and Hazel Drift mines, is reported to have been bonded by P. A. Wagner, of San Francisco.

UNION.—This mine is being operated by Williams and Harpending, who are running a 10-stamp mill on tailings from the old Springfield mine.

SHASTA COUNTY.

(From Our Special Correspondent.)

GOLD HILL.—This mine, at Harrison Gulch, is now being worked by Hurst & Fowler. The ledge is from 6 in. to 2 ft. in width, and the pay chute is 350 ft. in length. The property is well developed by tunnels, and the owners estimate there is enough of free milling ore in sight to mill $100,000. The high-grade ore is being shipped to the smelter at Vallejo for treatment while the balance is crushed in a small mill on the property.

MILKMAID.—At this mine, near French Gulch, development work is being pushed. The shaft sunk in the lower tunnel is down 20 ft., showing the vein to be 22 in. in width. The ore is fair grade.

SISKIYOU COUNTY.

(From Our Special Correspondent.)

SCHROEDER.—At this mine near Deadwood Gulch, 7 miles west of Yreka, work is progressing steadily. At the 10th level some 1,200 ft. from the surface, a large quantity of ore will be stoped out for crushing during the summer. This property comprises five patent claims, including six blind veins of ore, all of which prospect well.

TUOLUMNE COUNTY.

(From Our Special Correspondent.)

CONFIDENCE.—At this mine, 13 miles northeast of Sonora, 30 stamps are dropping and 43 men are employed.

DUTCH.—At this mine, at Quartz Mountain, the shaft is down over 600 ft. in good ore. Several levels have been opened, which furnish ore to the 10-stamp mill, which has a capacity of 25 tons per day. The rock contains about 3% sulphurets. Thirty men are employed. Albert Trittenbach is superintendent.

GOLDEN RULE.—The perpendicular shaft at this mine, on Golden Rule Hill, one-half mile south of Poverty Hill, is down 500 ft. and crosscutting is being done in rich ore. A 10-stamp mill is running and 20 men are at work.

JUMPER.—This mine, near Stent, on the south end of Golden Rule Hill, employs 80 men. At the 300-ft. level a rich body of ore was cut, which increases in width and value as the shaft goes down. A 20-stamp mill does the crushing, and a cyanide plant will soon be erected.

RAWHIDE.—The 60-H. P. gasoline engine has arrived at this mine, 2½ miles northwest of Jamestown. It will be used to operate the $10,000 Cornish pump.

WHITTO.—This mine, 1 mile west of Soulsbyville, is being re-opened by Moore & Company, who have cleaned out the main shaft to a depth of 240 ft. The mine was worked in the sixties and a large amount of gold was taken out. The pump and timbers, which have been under water for 30 years, are reported to be in good condition.

COLORADO.

BOULDER COUNTY.

EARL.—Platt McDonald is superintending the work that is being carried on in this mine at Springdale, and is taking out some good ore.

MILAN.—This mine, in Sugar Loaf District, about 8 miles from Boulder, up Boulder Canon, is in telluride ore of good quality, disseminated in fine particles throughout the entire vein matter, and although the solid streaks of mineral are small, yet the whole mineralized stuff is thickly impregnated with sylvanite. The property is owned by an English syndicate, having been sold during the past summer by Professor Bert Langridge.

CLEAR CREEK COUNTY.

(From Our Special Correspondent.)

SEATON MINING COMPANY.—Several changes have been made in this mine at Idaho Springs, and the shaft is to be continued to a depth of 1,700 ft. to a connection with the Newhouse tunnel. New bodies of ore have been encountered in the level at 265 ft. by crosscutting through what was thought to be the footwall. A big mistake was corrected, for it was found that neither wall was showing and that the level and shaft had been run on a streak lying within the center of the vein. The crosscut shows 10 in. of $70 ore on the footwall and 30 in. of $30 ore on the opposite wall, all of which was undiscovered because of the peculiar formations. The vein now measures 16 ft. wide, and the shaft will be sunk about 10 ft. in size. Air drills will be in operation within another three months.

SILVER AGE MILL.—This mill, at Idaho Springs, has passed into the hands of W. E. Renshaw, who has begun its remodeling, placing it on the same footing as the Mayflower mill, which he is also running. It will treat the mill dirt from the Gem mines.

EL PASO COUNTY—CRIPPLE CREEK DISTRICT.

(From Our Special Correspondent.)

ARCADIA CONSOLIDATED.—This mine, in Poverty Gulch, is a steady shipper of from 2 oz. to 4 oz. ore, in addition to some rich ore sent to the smelters at express rate. A shipment of over 500 lbs. was recently made which is estimated to net $3 per lb.

CHICAGO & CRIPPLE CREEK TUNNEL COMPANY.—This tunnel has been leased to the Mutual Leasing and Mining Company for a period of three years.

CLAUDE.—This small fraction on Gold Hill, owned by the Brother Jonathan, recently was leased to Messrs. Ashton & Richardson, who at once found a pocket of ore above the 185-ft. level, assaying from 2 oz. to 4 oz., the extent of which is not yet ascertained.

ELKTON CONSOLIDATED.—At this property, on Raven Hill, three drifts are being extended north by machine drill. The output for February will exceed $70,000, at an expense of less than $10,000 for labor account.

EL PASO CHLORINATION MILL.—This mill, at Gillette, during the month of February, treated 1,200 tons of $29 ore, making a total product of $34,800, a decrease of $5,100 from the output of January.

E. PORTER GOLD KING.—This Gold Hill mine recently made a carload shipment of 6-oz. ore from the new vein found by means of a crosscut at the 70-ft. level. The shaft has been sunk below the fifth or 500-ft. level.

GRANITE.—The owners of this mine, on Battle Mountain, recently applied to the District Court and got an order to survey the workings of the Portland Mi ,bn ije ieng the impression that the Portland was extracting ore from some of the veins which apexed on the Granite claim. The Granite shaft has been sunk 600 ft. two compartments and vertical. A new 80-H. P. boiler has been walled in and new gallows frame erected.

HALLETT & HAMBURG.—These parties, on Battle Mountain, have sunk their main shaft 30 ft. below the 100-ft. level on the contact between a phonolite dike on the north and the granite on the south, and it is the object to sink 30 ft. more before cutting a station to do more prospecting. From a winze at the 100-ft. level about five tons of low-grade ore is being mined daily. The vein here, at a depth of 25 ft., is fully 5 ft. wide. The prospect is well equipped with steam hoist, shaft house and ore bins.

ISABELLA MINING COMPANY.—This company, owning 21 claims on Bull Hill, last month did the largest amount of development, 772 ft., ever done on the mine in any one month. The Lee shaft was sunk and timbered 81 ft., making it a depth of 224 ft. The value of the 960 tons shipped amounted to $81,000. The profit made was $24,000. The Lee shaft for the last four days of February was sunk and timbered 5 ft. per day by 12 men. Size of shaft within timbers is 4½ × 13½ ft.

LILIE.—This Bull Hill mine, worked by Messrs. Foley & Company, under lease, shipped 500 tons last month which netted $19,500, or $39 per ton. The royalties on same were 25%.

PRINCE ALBERT.—This mine, on Beacon Hill, made a shipment of 12 tons, which is estimated to sample $300 a ton, taken from the 60-ft. level by the lessees, Babbitt & Keating. Ten men are employed.

UNION MINING COMPANY.—This company, owning the Pike's Peak & Orpha May claims, employ 86 men and in February shipped some 400 tons of ore. The deepest shaft is 450 ft. and as soon as a station is cut at that point sinking will be resumed. During the past four months $15,000 have been expended on these claims on surface improvements.

VICTOR.—It is reported that at the recent annual meeting of this mine, a Mr. W. H. Brevoort, of Paris, was elected president, vice Eben Smith, resigned. This is one of the few mines of the camp which has not passed a dividend since the summer of 1894. The yield is about the rate of 2,000 tons per month.

GILPIN COUNTY.

(From Our Special Correspondent.)

BARNES.—A contract has been let to sink the shaft, now 250 ft. deep, a further distance of 50 ft. The Barnes, for the last few months, has been a steady shipper of fair-grade smelting ore.

CALIFORNIA.—This mine, with the adjoining Hidden Treasure and Indiana claims, has been sold to the Gold-Coin Mines Company, of New York, by whom the western half of the property has hitherto been leased, with remarkably successful results. The consideration to be paid in cash is not generally known. The California Company, however, retains a royalty on the ore produced and the milling of the ore at a fixed price. By this deal the Gold Coin Company acquires one of the largest and richest producers in the country, with the special advantage of enabling them to open up their other property much more effectively and at a much less expense. The California-Kansas will now become a group second only, if at all, to the Gregory-Bobtail. It will in future, no doubt, be worked with the California or Hidden Treasure as the main hoisting and pumping shaft.

CLIMAX.—This mine, on Quartz Hill, has been leased from the Chicago owners by John C. Jenkins and other local men, who in drifting westward have struck a body of good-looking ore.

GALENA.—Good progress is being made in rebuilding the shaft house, and in installing a 45-H. P. hoist from the old Coaley mine in Silver Gulch. It is said that good ore has been opened up in the 400-ft. level, east.

GETTYSBURG (BATES HILL).—Sinking this shaft, now 645 ft. deep, is being continued.

GOLDEN CLOUD.—A leasing company has taken hold of this mine, in Russell District, near the Crown Point. After overhauling the plant and hoisting the water, they have commenced sinking the shaft, now 230 ft. deep.

LOTUS.—A contract has been let for sinking the shaft, now 475 ft. deep, a further depth of 125 ft.

PACKARD-MAMMOTH.—A contract has been let for drifting the first 100 ft. of the projected continuation of the Bobtail tunnel, on the Mammoth vein, the intention being to drive the tunnel right through the property, communicating for air with the Gold Rock shaft. The explorations on the vein west of this shaft have so far proved very disappointing, little or no pay ore being opened up. The great pocket on the "Nuckolls" claim, one of the finest surface pockets ever found in Gilpin County, seems to have cut out completely in depth, having apparently been formed by the junction of two veins, which diverge and pinch out going down. On this supposition they are crosscutting from the south branch, on which the tunnels have been driven, toward the other. This crosscut has already been driven 20 ft. through mineralized ground, without as yet striking any other important leader.

SLEEPY HOLLOW.—The case of Minnie Williams vs. Sleepy Hollow mine, for $5,000 damages, arising out of the flooding disaster in 1895, is now being heard in the District Court and attracts great interest here.

LAKE COUNTY.

THE LEADVILLE MINERS' STRIKE.—In Denver, Colo., February 26th, the committee appointed by the Legislature to investigate the Leadville strike, submitted a report. The committee recommends that a board of arbitration be appointed to deal with the question, two to be chosen by the mine-owners and two by the miners, the fifth to be chosen by the four. It is recommended that whatever decision this board of arbitration shall arrive at be made binding on both sides and an agreement to that effect be signed before the inquiry. To this end the committee submits an agreement in full, which provides that the scale of wages in force immediately before the strike occurred shall be conceded by the mine owners and shall remain in force until the board of arbitration shall have arrived at a decision. Later despatches state that the mine owners decline to enter into any arbitration agreement.

(From Our Special Correspondent.)

JAY BIRD.—This property lies in Upper California Gulch and will soon be on the shipping list. A new tunnel is now in about 200 ft. and from indications it is the belief that the breast is near the ore body.

LEADVILLE STRIKE.—So much new work has been going on and shipments have been increasing so fast that the strike has faded into obscurity during the past few weeks. But the strike committee again tried to bring the union into prominence this week and met with a failure. It is well known that quite a number of men have withdrawn from the union and are going to work, and from the present methods adopted by that organization there will be more to follow. The Sedalia, Highland Mary and

Seneca properties have not been tangled up in the strike and have worked steadily, paying their men the union scale. It appears, however, that these properties employed engineers who do not belong to the Miners' Federation, and the union last week asked that these engineers be discharged and Federation men be put in their places. This was refused by the managers, who stated that they were paying union wages and they would employ whom they pleased. Accordingly the union miners were called out by the Miners' Union. There are about 60 men employed on the three properties, and only five men quit when they were called out. Their places were at once filled and work goes on steadily. It is understood that agitator Boyce and Eugene V. Debs are to visit Leadville again next week. The significance of this visit is not known. The managers have all the men they need, and there are plenty of men here ready to go to work whenever the opportunity offers.

LOWER HENRIETT.—The shaft and drifts have been cleaned out and 50 men put at work. Shipments have been resumed. The ore is being taken out at the third and fourth levels and is a lead carbonate assaying an average of 12 oz. silver and 40% lead.

MAHALA MINING COMPANY.—A great deal of important development work is being carried on by this company and the outlook is said to be very encouraging. The property is not shipping heavily, but is handling about 25 tons of ore per day. The present pumping plant will not be enlarged, but the company will pay the Emmet for its share of the pumping.

ROCK HILL GOLD AND SILVER MINE COMPANY.—In a special telegram to the *Journal* last week I briefly mentioned a big strike made by these people in one of their shafts. The strike promises to prove one of the most important and the richest made in the silver-lead producing area of the Leadville camp for some years. The company was formed some months ago by Thos. Owens, Frank Bulkley, Jesse F. McDonald and H. R. Woodward and since last August active work has been carried on. They have 100 acres of ground, including the Cornucopia, Nil Desperandum, Robin Hood, J. M. C., Hokitika, Australasian, First National, Switzerland and a portion of the Oscar placer. All of this ground is located on Rock Hill, south of the Emmet mine, and is separated from the group of old Rock Hill producers by the Iron Fault. Operations have been carried on through the Nil Desperandum. This claim was worked in 1886 by D. H. Moffat, who sank a shaft 500 ft., but after spending about $60,000 gave up the search for the ore. The Rock Hill Company took up the work in the old Moffat shaft and sank the shaft to a depth of 657 ft., where they started two drifts. In one of these they soon encountered stringers of ore, and last week when in 140 ft. found the entire face of the breast a mass of hard carbonate thick with chlorides and very rich. Two breast samples, not picked specimens, but average ore, have been assayed and one runs 408 oz. silver, 0.6 oz. gold and 3% lead. The other assayed 479 oz. silver, 0.7 oz. gold and 35% lead. Native silver and chloride specimens have also been taken out in abundance. A force of carpenters is at work erecting ore bins and preparing for shipments. This strike clearly proves the continuity of the big Iron Hill ore chutes to the southwest, and as this territory is almost wholly unexplored the importance of the new strike cannot be over-estimated. The attention of the entire local mining world is now centered on the Nil Desperandum and developments there will be watched with the greatest interest.

PAWNOLAS.—The arrival here of Mr. Percy St. George, of Philadelphia, and Mr. J. L. Emerson means that preparations are under way for the starting up of this property, which has been frequently described in these columns. It is excellently situated in Big Evans gulch, and in 1893 an immense iron body was opened up in the lower workings. It was closed down soon afterward, and this is the first time that any efforts have been made to resume. It is thought that before the middle of the month the Pawnolas will be on the shipping list.

OURAY COUNTY.

(From Our Special Correspondent.)

BANK OF OURAY.—A large force of men is employed in driving a crosscut, which is intended to intersect the Humboldt vein at a depth of several hundred feet. Frank Wilson is acting manager.

BLAINE.—The report of the sale of this mine, in the Sentinel District, as announced in a recent issue of the *Engineering and Mining Journal*, has been practically confirmed, although more minute details are still withheld from publication. Louis Sherbino, of the Dallas, negotiated the deal and received a portion of the purchase price. The new company will expend $60,000 in the construction of a wagon road from Ridgway over the Mesa to the Blaine, and to run a tunnel to develop the vein at a great depth. The Blaine is one of the Sentinel group of claims in the Dallas basin on the north slope of Mt. Sneffels. Dr. H. Judd (deceased), of Upper Alton, Ill., was the original projector of the Sentinel Company. Until the time of his decease, several years ago, considerable work was done every year, but since his demise, with the exception of leasing, no work has been performed. There are now 1,500 ft. of levels, shafts and winzes on the Blaine.

COLUMBIA MENONA.—The crosscut from the mill on February 17th cut the vein at a depth of 800 ft. The tunnel is 1,400 ft. long. The ore body where struck was 30 in. wide and of good grade.

GOLDEN SAN JUAN MINING COMPANY.—A New York syndicate has purchased the Armenia and Herald gold mining claims from Jacob Alexander, of Ouray. The papers, upon being signed, were turned over to the above company, which is incorporated in West Virginia with a capital stock of $1,000,000. The members of the syndicate are all Eastern people. The Armenia and Herald are situated near Red Mountain, 12 miles south of Ouray.

GUSTON.—The outlook in the lower workings is considerably brighter of late, and the indications that this once great producer was at last exhausted have again been dispelled. The output has increased to a carload daily, which goes to Silverton smelters.

IOWA CHIEF.—A narrow streak of very rich ore has been encountered in this property, lying on Dexter Creek, opposite the Bachelor.

K. C. HUMBOLDT.—This mine is in Ouray County, but is being worked from the Telluride side. About 70 men are employed taking out ore and opening up new stoping ground. Shipments per week average from six to seven cars of high-grade gold and silver ore. F. C. Meyer, of Kansas City, is resident manager.

NEWSBOY.—M. S. Corbett is operating this mine, a mile north of Ouray, and will begin shipments March 1st, having just struck a small vein of rich ore.

PARK COUNTY.

BALTIC.—A strong vein of ore is reported to have been opened in this mine contiguous to the New York mine, and is supposed to be a continuation of the ore chute opened in that mine. Mr. Rische is breaking down seven tons of ore per day with three men from an ore chute 80 ft. square.

PITKIN COUNTY.

FRANKLIN.—This mine, tied up by litigation for a number of years, was started up recently. John Canning, formerly superintendent of the Moffat properties in Leadville, is in charge.

SAN JUAN COUNTY.

VICTOR HUGO.—Bastiste & Company have struck the ore body in this claim in Maggie gulch. A crosscut of 180 ft. was run before the vein was reached. A 50-ft. drift has been run on the vein, which shows an 18-in. streak of quartz.

WIGWAM MINING COMPANY.—This company is working the Mogul mine, at the head of the south fork of Eureka creek. A tunnel is being run to cut the lead about 300 ft. down, and which will be done in the early summer. The lead is from 9 to 30 ft. wide on the surface.

SAN MIGUEL COUNTY.

(From Our Special Correspondent.)

ALLEGHANY.—Development work is still in progress on this property, under the superintendence of J. M. Dikeman, who represents the Missouri, Kansas and Texas Trust Company, of Kansas City, holding a lease and bond on the group. An upraise is being driven from the second to the third level and thence it will be carried to the surface, providing good ventilation for the mine and at the same time open new ore bodies which can rapidly be put in condition for stoping. A tunnel is in progress on the Alleghany No. 2, situated on the old Pandora lead crossing the Alleghany proper at almost right angles, and it is in a distance of several hundred feet. Before the mill starts up this spring it will be overhauled, some new machinery added, and its present capacity—20 stamps—probably increased to 30 stamps.

COLUMBIA-MENONA MINING AND MILLING COMPANY.—The vein on which this company's four adjoining properties are located was recently cut by a crosscut tunnel 1,400 ft. in length, the mouth of which is within 200 ft. of the company's 30-stamp mill. At the intersection the lead is 12 ft. wide, carrying 6 ft. of mineral consisting of decomposed quartz and porphyry, gray copper heavily impregnated with lead and yellow copper. The quartz is identical with that of the Tom Boy and, it is said, could not be distinguished from it. A few carloads of the smelting ore will be taken out and shipped, and if the returns are satisfactory, shipments will be made regularly in the future. The vein was cut 450 ft. below the lowest of the upper workings, and the owners expect to soon commence driving a raise connecting the crosscut with the second level of the upper workings and operate the mine through the crosscut. This method would greatly facilitate and curtail the expense of handling the ore.

IRON.—Jesse Love has just made a new strike in this mine at Rico. After this property had lain idle for several months, pending a sale, Mr. Love resumed work and the fifth shot broke into a new ore body.

NELLIE.—E. I. Field, representative of the North American Exploration Company, who has been residing in Telluride for some time past, has a force of men drifting on the lower level of the Nellie to cut the Star Gazer lead about 400 ft. distant. When this vein is reached it will be explored by drifts both ways from the intersection, and if its size and value is satisfactory, the option which the North American Exploration Company holds on the property, as well as on the Nellie and Pinch Bros. group of gold lodes, just over the ridge of mountain, in Prospect Creek basin, will be taken up and preparations made to work them on an extensive scale. The Nellie, Star Gazer and Pinch Bros. claims combined form one of the largest gold propositions in the West. They are so situated that all of them can be developed and opened up at a comparatively small expenditure of money. Pinch Bros. have a contract from Mr. Field for driving a tunnel 900 ft. on the Stella vein, a claim of their group, and it is now in over 500 ft. and going ahead 8 and 9 ft. a day.

NORTH AMERICAN EXPLORATION COMPANY.—E. L. Field, representative of this company, of New York, is having extensive development work done on the Prospect Creek properties, near Telluride. A contract has just been let for driving 900 ft. of tunnel on the Stella vein, which, in this distance, will cut six cross leads at a depth of 2,000 ft. They are making progress at the rate of 8 ft. a day, and the ore now runs from $15 to $20 in gold to the ton. On the lower level of the Nellie mine they are in nearly 1,100 ft., and it will require about 300 ft. more of work before they reach the rich ore in the Star Gazer. It is the intention of the company to connect all these properties under ground.

PULASKI MINING COMPANY.—Under the superintendence of W. R. Beattie, of Telluride, development work is being prosecuted on the Pulaski, and very rich gold ore is being encountered in the tunnel driven on the lead, which is in several hundred feet. This property is owned principally by Chicago people, Geo. E. Harmon, of the Central Music Hall, being president. The company intends to increase the capacity of its mill situated near the property and put up a wire rope tramway connecting it with the mine.

SMUGGLER-UNION MINING COMPANY.—N. T. Mansfield, manager for this company, recently made arrangements in Denver for a concentrator which will be put in at the Pandora mill at once. It is claimed that 96% of the valuation of the tailings of the mill can be saved by this process.

FLORIDA.

MARION COUNTY.

DUNNELLON PHOSPHATE COMPANY.—At the annual election held in Ocala, on February 16th, the present officers were re-elected, as follows: President, Capt. John L. Inglis, of Madison; treasurer, H. D. Auchincloss, of New York, and R. D. Barker, secretary.

GEORGIA.

HALL COUNTY.

It is reported that an English syndicate has purchased several hundred acres of gold-mining lands near Gainesville, paying $40,000. Capt. R. R. Asbury, of White County, is said to be the seller.

LUMPKIN COUNTY.

DAHLONEGA MINERAL PROPERTY.—R. W. Walker, of Canton, O., has examined mineral property near Dahlonega, with a view to buying and developing.

WELLS.—Mr. Jaquist, who is opening up this mine, near Auraria, will soon be ready to go to work in earnest. Forty men or more will get employment by this enterprise.

IDAHO.

IDAHO COUNTY.

(From an Occasional Correspondent.)

BLUE DRAGON.—This mine, which is under bond to Samuel I. Silverman, is working three eight-hour shifts, and the shaft has now reached a depth of 140 ft. Sinking is necessarily slow, as the company has not yet put in a steam pump. Drifts have been run east and west from a 75-ft. level, showing a good ore chute.

BUFFALO HILL MINING COMPANY.—E. L. Mahoney of Butte, is manager, and has about completed the new flume and pipe line. This property will in the future be worked to larger capacity than ever before.

CLEVELAND.—It is reported that this mine will be incorporated soon and a force of men put to work on development. The Cleveland shows a vein of great strength.

CROOKED CREEK PLACERS.—Work will be commenced on these placers about March 15th. The heavy snow fall will undoubtedly make a good water season and a long run for the placer miners.

DEADWOOD.—A new giant and pipe line has been purchased for this placer property, and will be laid this spring.

FLORENCE.—Work is in progress on a number of claims in this camp. The Gold Bug and Banner are being developed by shaft and tunnels. The Blossom people are sinking on their property, and the Bayhorse mine will be equipped by March 1st with steam hoist and pump. The Red Bird people are shipping ore to the custom mill. The Poorman Company has a hoist on the road, and the owners of the Oregon are getting a steam pump. Other properties are being developed, and spring will see much more activity in this camp than last year.

HOMESTAKE AND BADGER.—These claims in the new district, 18 miles south of Elk City, have been showing up splendidly this winter. They are under bond to S. I. Silverman, of Butte, Mont. A contract has been let for an additional 800 ft. of drifting and 400 ft. of raises. The total amount of develop-

ment work on these claims is now 600 ft., and in ore. The elevation of this section is 6,500 ft. above sea level. The formation is granite, and the veins, apparently fissures, striking N. 70° W., with a dip 85° south.

LITTLE GIANT MINE COMPANY.—This mine is working but a few men this winter, principally doing development work.

SEVEN DEVILS DISTRICT.—The prospect for a railroad from Weiser into this section has stimulated work in the mines. A railroad into this camp would put many properties on a paying basis that have long lain dormant for lack of shipping facilities.

TERNAN MINING COMPANY.—Work has progressed all winter on a ditch for this company. Manager Hueston is now on the ground, and expects to be in readiness to run by June 1st.

WARREN PLACER MINING COMPANY.—This company has installed a large steam shovel plant on its placer ground, and will work to its fullest capacity.

MICHIGAN.

COPPER.

PHŒNIX COPPER MINE.—For some time past an option has been held on this mine, in Keweenaw County, and there are prospects of its being placed with a strong company, says the Marquette *Mining Journal*. C. J. Hodge and Captain Jonnson Vivian, of Houghton, each own one-fifth interest in the property. The mine showed up well at the time it closed down, particularly in mass copper. The Phœnix is the successor to the oldest copper company on Lake Superior. The first organization was made in February, 1844, and the original association and its successor prosecuted mining work on this location continuously for nearly 50 years. The company has opened mines on the estate in the ash bed, but as yet none has proved successful. It has had periods of prosperity, when the product of the mine was large, but the surplus was dissipated in working other veins that proved the reverse. The first mines opened by the company were in the northern slope of the range; but at the time the mine closed, work was confined to the Bay State mine, a fissure vein on the south side of the greenstone. The product of the mine for the years 1874-76 aggregated 2,100 tons. The property is fully equipped with mining machinery that would be serviceable for some little time.

MINNESOTA.

(From Our Special Correspondent.)

ILLINOIS STEEL COMPANY.—Officials of this company have been on the Mesabi and Vermilion ranges the past week, and it is understood that they have made arrangements for the purchase of several properties aside from their affiliated interests with the Minnesota Iron Company. Among these properties are said to be the Pioneer, at Ely, on the Vermilion Range, one of the coming great properties of the Lake Superior District, and one or two properties on the Mesabi, whose names cannot yet be given out. One of these is a very large and probably a very important deposit, and has been considerably tested by drills and pits, though not mined as yet.

MINING TAXATION.—A tax bill which seems likely to meet considerable favor among members of the Minnesota Legisture is the direct taxation arrangement of Mr. Reeves, which, though set at 8c. a ton, will, it is understood, be put at 5c. for final passage. The iron ore interests and St. Louis County, in which are all the mines, are strongly opposed to the bill.

IRON—MESABI RANGE.

(From Our Special Correspondent.)

FRANKLIN MINING COMPANY.—This company shut down operations at its Franklin and Bessemer shafts last week on account of the price probable for ore. About 150 men are thrown out for an indefinite period.

LAKE SUPERIOR CONSOLIDATED IRON MINES.—It has been reported and published in Duluth papers as fact that this company was to be connected with no more mining this year than was done by the Carnegie-Oliver Company. This is not correct; on the contrary, both the Adams and Lake Superior will be steadily worked by the Consolidated. The latter is working about 400 men.

MINNESOTA IRON COMPANY.—There have been rumors of the close of the Fayal and Genoa mines, the only properties of this company on the range now active, but so far no orders to close have been received. The Fayal has about 250,000 tons of ore in stock, and the Genoa has just begun to mine with regularity. Both are mines of the highest grade, and together they employ about 600 men.

MISSOURI.

MORGAN REFRACTORY ORE REDUCTION COMPANY.—W. M. Morgan and others, of Kansas City, have incorporated this company, with a capital of $50,000.

BOONE COUNTY.

BOONE COUNTY COAL COMPANY.—This company has been reorganized as a result of the investigations by Wisconsin parties. Mining operations will be inaugurated as soon as railroad facilities are secured. Haskell Withers, of La Crosse, Wis.; J. S. Merchant, of Black River Falls, Wis., and William McMillen, of Neilsville, Wis., are interested. Machinery will be purchased at once and placed on the property, which consists of 3,000 acres.

JASPER COUNTY.

(From Our Special Correspondent.)

JOPLIN ORE MARKET.—The cold weather of the past two days stopped work on hand jigs, but did not affect the steam jig plants nor reduce the output of ore throughout the district. The shipment of zinc ore was 19 carloads less than the preceding week and 5 cars less than the corresponding period last year. The lead shipment was 69 carloads more than the preceding week, owing to big shipments from Galena, Kan., as the operators get the ore off of their mines before March 1st, so that they will not have to pay taxes on it. It was 44 cars more than the same period in 1896. The highest price paid for zinc ore was $22 per ton, about 60 tons of Joplin ore selling at that price. Some Galena and Webb City ore sold at $21 per ton. The Oronogo ore sold at $21 and the Alba at $20 50 on the cars. The top price for the corresponding week of last year was $23 per ton. Lead ore held firmly all week at $17.75 per thousand pounds delivered, and $17.25 in the bin. During the same time in 1896, lead sold at $18. Following are the sales of zinc and lead ores for the week ending February 27th, 1897: Joplin zinc, 1,092,810 lbs.; lead, 117,290 lbs.; value, $13,010. Carterville zinc, 1,041,340 lbs.; lead, 184,450 lbs.; value, $13,043. Webb City zinc, 510,480 lbs.; lead, 53,000 lbs.; value, $5,650. Galena, zinc, 2,950,000 lbs.; lead, 3,475,000 lbs.; value, $87,362. Aurora zinc, 585,000 lbs.; lead, 40,000 lbs.; value, $3,747. Oronogo zinc, 81,670 lbs.; lead, 2,590 lbs.; value, $902. Alba zinc, 84,000 lbs.; value, $882. District totals for the week: Zinc, 6 347,640 lbs.; lead, 3,882,330 lbs.; value, $124,617. District totals for eight weeks: Zinc, 47,964,820 lbs.; lead, 10,634,820 lbs.; value, $614,863.

BIRTH DAY COMPANY.—This company, on the Bolen lease of the Robb land southwest of Joplin, is sinking a new shaft to the ore face, on account of the recent caving in of their drifts.

BURKE, MALONE & COMPANY.—This company, on the Empire Land and Smelting Company's land just west of the zinc smelter, has opened a large body of zinc ore in open ground, and last week hoisted and cleaned up 28 tons of high-grade zinc ore.

CHICAGO CONSOLIDATED COMPANY.—This company, on the Leonard land, is drifting at 130 ft. on a large face of lead and zinc ores. Last week they made 16,470 lbs. of lead ore and 25 tons of zinc ore.

COOLEY & COMPANY.—W. D. Cooley, W. Halyard and E. Foster, of Joplin, and Mr. Pope, of St. Louis, have been sinking a prospect shaft on two lots on the Perry lease at Lone Elm, and last week at 120 ft. opened up a good face of high-grade zinc ore.

GET THERE MINING COMPANY.—This company has a 40-acre lease south of Carterville, and last week turned in 41 tons of zinc ore and 47,380 lbs. of lead ore.

GRANBY LAND.—H. Crossman has just completed another deep drill-hole for the Granby Mining and Smelting Company, at Oronogo. It was put down to 253 ft., in which 7 ft. of very rich zinc ore was penetrated at 203 ft. This drill-hole is on the 40 acres east of the Frisco railroad track, on which no mining has been done. Last year Mr. Crossman found three deep prospects on the west part of the company's land.

HURST & COMPANY.—This company, on the Ba Som land, sold 3,000 lbs. of lead ore last week, and is getting out large amounts of high-grade zinc ore. A concentrating plant will soon be put up.

MRS. E. M. PRESTON & COMPANY.—This company is developing a 38-acre tract on the Jackson land west of Joplin, and last week, in sinking at 35 ft., developed a large face of lead and zinc ore in open ground. The lease has been laid off into 40 mining lots, and most of them have been subleased to operators.

REBURTA COMPANY.—P. L. Crossman has contracted to drill 1,000 ft. on the company's lease, south of Carterville. This lease was a large producer about two years ago, making as high as 140,000 lbs. of lead ore and 20 tons of zinc ore in one week, but the water was very strong and when the dirt got there the stopped.

LAWRENCE COUNTY.

(From Our Special Correspondent.)

GOBBLER MINING COMPANY.—P. L. Crossman, of Joplin, has, for some time past, been drilling at Wentworth for this company, of which H. Gross is the manager. He is now at work on a hole that is 400 ft. deep, and nothing but flint formation had been developed to that depth. On this account Mr. Gross had decided to go deeper and see what under lies this flint.

SEATS & WHITTAKER.—They leased the shaft put down by A. D. Johnson & Company on the Black land, southeast of the old Rolla lease, where good lead and silicate in shallow ground was struck about a year ago, but it proved to be small pockets, and the shaft was abandoned in a short time. They leased the shaft and started to work in an old drift, and after a few days shot into a big lead and also found ore in the bottom of the shaft.

WHITAKER & COMPANY.—The company will start to sink its shaft deeper on the Black land, where lead ore was struck recently. Last week they turned in 4,000 lbs. of lead.

MONTANA.

DEER LODGE COUNTY.

EMERY.—From September 1st, 1895, to January 1st, 1897 (16 months), the total output of this mine was $119,191; and during that period the royalty paid to the owners of the mine amounted to $27,682. Harrington & Company, who have been working the mine under lease during the period stated, have secured a release on the mine for 18 months longer, from March 1st, 1897. Regular shipments are being made.

SILVER BOW COUNTY.

(From Our Special Correspondent.)

BUTTE & BOSTON MINING COMPANY.—At the Blue Jay they are getting ready to start the mine. The shaft is down 650 ft., and there is a good body of ore on the bottom, but the ground is mostly worked out above this level. It is reported that a new hoist will be placed on the mine, and the shaft sunk before much ore is extracted. At the West Gray Rock an engine and boiler was placed on one of the air shafts for the use of lessees, as the company is about to commence taking the water out of their main west shaft, which is down 700 ft., 300 ft. of which is under water. It was sunk to work the old Gray Rock silver-gold vein; which the company ceased developing about four years ago. Since then several parties of lessees have been working continuously above the 500-ft. level. At the Harrington Placer, machinery is on the ground to sink a shaft about 400 ft. east of the Glengarry. There is a small shaft down 100 ft., which has proved the existence of a body of 10% copper ore.

NEVADA.

ESMERALDA COUNTY.

HOLMES MINING COMPANY.—The Bailey process is to be used in extracting the precious metals from the tailings and low-grade ores of this company at Candelaria and Belleville.

LINCOLN COUNTY.

DE LAMAR.—The miners employed at this mine at De Lamar were laid off on March 1st for an indefinite time. Mine and mill are closed because of the recent organization of a miners' union under the direction of Edwin Boyce, president of the Western Federation of Miners, and the preparations, of which this is the beginning, to inaugurate a strike. Anticipating such a movement, the management has taken this step whereby the instigators of the movement will be given ample time to consider the advisability of what they propose.

LATER.—The miners held a meeting on March 2d and passed resolutions to the effect that they are satisfied with the wages that have been paid to them, that they will not ask for an increase, that they are thankful for and appreciate the home comforts which the company has provided for them, and expressing their desire to return to work. In consequence of this the manager decided to resume operations on March 5th.

NEW MEXICO.

SANTA FE COUNTY.

GOLD STANDARD.—The strike made by Carley & Aranda, in this mine, 3 miles from San Pedro, in October, has proven to be one of the richest strikes made in the Territory within a year. Four shafts have been commenced on the mine, the deepest of which is not quite 20 ft. This shaft has yielded about $1,000 in gold for every foot of depth. This rich ore is found in narrow seams running through the vein matter. The entire vein, exclusive of the narrow stringers which carry this high-grade ore, is rich enough to pay for mining and milling. The owners of the mine have leased the San Lazarus mill, where the ore will be treated. The ore is free milling.

TAOS COUNTY.

GOLDEN TREASURE, TIGER AND HIDDEN TREASURE.—A deal has been consummated whereby these properties in the Red River district were sold to V. G. Hyatt, of Pueblo. The prospectors who sold are William Sellers, Isaac C. Burns, C. E. Compton, E. P. Westoby and the three Oldham brothers, all of Red River. The purchase price was $10,000, to be paid April 1st, 1897.

GREAT WESTERN.—Paul Baca, Pellini and Bianchd are doing extensive development on this group. They have upward of 300 ft. of tunnels, and more than 100 ft. of shaft work, and at present two shifts are sinking.

LONG CANON.—On these placer grounds in the Red River district, L. H. Whitcomb, of Cleveland, O., is sinking a shaft and developing one of the Lode claims, which, it is said, assays $48 at the surface. Five men are employed.

NORTH CAROLINA.

PITTSBURG GOLD REDUCTION COMPANY.—This company, with a capital stock of $300,000, was recently incorporated for the purpose of developing gold mines in Mecklenburg and other counties. B. Donovan, of Pittsburg, Pa., is president; J. A. Campbell, of Wheeling, W. Va., vice-president; A. W. Kennedy, of Pittsburg, secretary and treasurer. T. H. B. Haase will be manager, located at Charlotte.

PENNSYLVANIA.

ANTHRACITE COAL.

LEHIGH COAL AND NAVIGATION COMPANY.—At the annual meeting of the stockholders the following were elected as the board of managers for the ensuing year: Lewis A. Riley, president; Edward W. Clark, Joseph S. Harris, Calvin Pardee, Francis R. Cope, Edward Lewis, Samuel Dickson, Abram S. Hewitt, Thos. McKean, Charlemagne Tower, Jr., J. Bayard Henry and Dr. John S. Wentz.

BITUMINOUS COAL.

MOON RUN COAL COMPANY.—This company, of Moon Run, is about to install an electric haulage plant in its colliery, and has contracted with the General Electric Company for electrical equipment sufficient to operate a mine road with over 3½ miles of track. The generating station will consist of one 165-K. W. 250-volt generator directly connected to a Harrisburg Ideal Engine 18½ in. by 16 in. These with the switchboard will be set up in the pre-ent power-house, which contains an air compressor, plant for the operation of certain pick machines. The inside haulage, will be handled by one 10-ton mining locomotive, equipped with 40 H. P. motors. This will haul 40 loaded cars per trip, each loaded car weighing about 2½ tons. There will be over 3½ miles of trolley wire in the mines with the necessary feeders.

FAYETTE COUNTY.

BLUESTONE QUARRY.—This quarry, one of the largest and most valuable in the county, is soon to be worked to its full capacity. It is proposed to put 100 men at work at the start, which force will be increased before next summer.

SOUTH DAKOTA.

LAWRENCE COUNTY.

CARROL GROUP.—This group of mines, near Deadwood, has been sold to D. C. Bovey and associates, who are to develop the property at once. Several hundred tons of ore have been shipped from one of the properties that went about $50 to the ton.

CLINTON MINING COMPANY.—The property of this company was sold recently to Henry Williams, the general manager of the Colorado Mining Company, for $7,400, the amount of the indebtedness incurred by John C. Henderson, of Butte, Mont. The Clinton mine is located in Park Canyon, a half a mile above the Homestake. Mr. Henderson purchased the property for about $40,000 eight years ago, and expended about $45,000 in running a tunnel 1,800 ft. into the side of the mountain.

GOLDEN REWARD MINING COMPANY.—At the Bottleson shaft, at Terry, on which work was abandoned a year ago, this company has found the vein about 10 ft. beyond the end of the old shaft. Steady shipments have been in progress for some days, and the shaft shows ore of the same belt as the ledge from which the Tornado is taking 20 cars a day. The ore, it is said, averages about $60 to the ton in the shaft.

TENNESSEE.

FENTRESS COUNTY.

OIL LANDS.—L. T. Smith, of the Phœnix Oil Company, is said to be interested in a company being organized to control and develop 10,000 acres of oil lands.

TEXAS.

BRAZOS COUNTY.

F. L. Martin, of Houston, is prospecting coal deposits near Wellborn.

HILL COUNTY.

OIL LANDS.—A company has been formed to drill for petroleum near Hillsboro, in which John F. McKenzie is interested.

MILAM COUNTY.

YOAKUM COAL COMPANY.—This company, of Rockdale, is about to open another shaft.

UTAH.

BOX ELDER COUNTY.

PLAYER GROUP.—On this group of four claims the vein, which is a fissure, is strong and well defined, and at the surface the ore body is all of 18 in. in width, from which, it is said, assays of 10% lead, 240 oz. silver and $20 in gold to the ton can be obtained, while in the bottom of the 20 and 45-ft. shafts which have been sunk on the ledge the ore chute has enlarged to 2 ft.

JUAB COUNTY.

EUREKA HILL MINING COMPANY.—The annual meeting of this company was held last week and the following board of directors was elected: M. C. Fox, president; R. J. Hilton, vice-president and general manager; J. Q. Packard and H. A. Whitney. L. S. Hills was appointed treasurer.

SUMMIT COUNTY.

CUMBERLAND.—An important strike is reported to have been made in this mine. One foot of good lead carbonate ore was encountered in an incline from the tunnel, which has a length of 600 ft. and a vertical depth at the face of 300 ft. The incline in which the strike was made is about 100 ft. long. The ore resembles that found elsewhere in the property, which gave about 6% lead, 50 oz. in silver and $2 in gold.

DALY MINING COMPANY.—This company, whose mine is at Park City, has resumed the payment of dividends. One of 25c. per share, amounting to $37,500 and payable February 28th, has been declared, which has increased the total to $2,925,000. The company has a cash balance on hand of $160,725 and bullion in transit valued at $60,000. The following board of directors has been elected for 1897: R. C. Chambers, Richard Mackintosh, J. B. Haggin, George M. Scott and David Keith. R. C. Chambers was made president and general manager; Richard Mackintosh, vice president; J. B. Haggin, treasurer, and Clarence J. Almy, secretary.

DALY WEST MINING COMPANY.—This company has laid off 30 men temporarily while the shaft is being sunk to the 1,350-ft. level, as the usual force cannot well be employed while this work is in progress.

TOOELE COUNTY.

MERCUR GOLD MINING AND MILLING COMPANY.—The option that was secured in January by Capt. De Lamar upon this company's property has been surrendered and the contract is now in the hands of the company, although the option really continued until March 22d. The $25,000 deposited as a forfeit is thereby lost to Mr. De Lamar, and an additional $25,000 is believed to have been expended in the exhaustive examination of the mine.

SEARCHLIGHT MINING COMPANY.—The shareholders of this company held their annual meeting recently and elected officers and directors as follows: R. C. Chambers, president; John Dern, vice-president; J. J. Daly, treasurer; John Beck and C. W. Miles. Simon Bamberger was appointed secretary of the company.

VIRGINIA.

WISE COUNTY.

TOMS CREEK COAL AND COKE COMPANY.—This company on March 1st absorbed the Toms Creek Coal Company and the following properties on Toms Creek: Coeburn Coal Company, Pine Run Coal and Coke Company, Swansea Coal Company and Wise County Coke Company. The new company has also leased for 10 years the mine of the Lee Coal and Coke Company, and has contracted for the coal output from the mine of the Sexton Coal and Coke Company. It is understood that George L. Carter, D. P. Graham and John Robinson, of Wythe County, who own the Dora Furnace at Pulaski and other valuable properties in that section, are largely interested in the new management. The officers of the Toms Creek Coal and Coke Company are: President, Hobart Miller; vice-president and general manager, William J. Brown; treasurer, George L. Carter; secretary, C. B. Anderson.

WASHINGTON.

LEWIS COUNTY.

EVERGREEN.—A strike is reported as having been made in this mine, in the Silver Creek District, 8 miles from the Great Northern Railroad. The strike is in the face of the tunnel, 60 ft. from the surface, where a 5-ft. pay-streak was encountered. The ore carries gold, silver and copper, and the assays are said to show values of $25 per ton in those metals.

OKANOGAN COUNTY.

AMOSKEAG MINING COMPANY.—This company owns the North Star mine, on which 60 ft. of shaft work has been done, showing a vein 3 ft. wide with 20 in. of shipping ore. Forty tons are now on the dump, which will be shipped in the spring. A contract has been let for 50 ft. further work on the shaft. J. S. Gray is superintendent. The ore is a chloride carrying gold.

SNOHOMISH COUNTY.

HOODOO.—At this mine, in Stilliquamish District, 12 men have been employed in development. The main tunnel is in 350 ft., encountering ore one-third the distance and following it without interruption for 100 ft. This ore averages from $35 to $37 per ton in gold and copper.

WEST VIRGINIA.

KANAWHA COUNTY.

It is reported that O. P. Fairchild will develop coal deposits near Pondgap.

WYOMING.

CARBON COUNTY.

CHICAGO & ROCKDALE GOLD MINING COMPANY.—This company has been organized by M. McDonald, Henry Burkholder, secretary of the Mining and Mineral Exchange; James W. Morrison, Edward Mayer, William Murphy and E. A. Terrill, all of Chicago. The Rawlins parties interested are C. S. Crysler and W. F. King. The company controls about 5,000 acres of placer ground on Rock Creek. A contract has been let for the building of a ditch 7 miles long, which will be 12 ft. wide at the top and 8 ft. at the bottom, with a depth of 4 ft. Its cost is placed at $11,000. Active work will be commenced at once.

UINTA COUNTY.

DIAMOND COAL AND COKE COMPANY.—A contract for the largest cone hoisting engine yet built west of the Mississippi River has been given to the Edward P. Allis Company, of Milwaukee, Wis., by this company, of Salt Lake City, with mines at Diamondville. This engine is to be a duplex 28×60 in. and rated at about 1,500 H. P. The single drum has a capacity to hold 6,000 ft. of 1¼-in. wire rope. The engine is to be fitted with Reynolds Corliss valve movement, with miter reverse, band friction clutch and post brakes, and operated by separate steam cylinders making it an up-to-date plant.

FOREIGN MINING NEWS.

BOLIVIA.

HUANCHACA SILVER MINING COMPANY.—During the past year this company has had much trouble from water. In addition to the great quantity found in the mine, it has had the effect of corroding pipes and pumps very rapidly. News has just been received of a new influx of water which has covered several of the levels lately worked.

BRITISH COLUMBIA.

SLOCAN DISTRICT.

ARLINGTON AND BURLINGTON.—These mines, on Springer Creek, 6 miles east of Slocan Lake, have been sold for $50,000, and 10% of the purchase price was paid down. Frank Watson, of Spokane, is the purchaser. The owners were Robert Cooper and Con Fielding. The ore is from 15 in. to 24 in. wide. Both mines were located in September, 1895. The property is developed by a shaft 70 ft. deep in ore, and it is estimated that there is $25,000 worth of ore in sight.

IDAHO MINING AND MILLING COMPANY.—This company has declared a dividend of $20,000, which is the fifth of the same amount paid in five months. A total profit of $132,000 has been distributed among the shareholders to date.

TRAIL CREEK DISTRICT.

(From Our Special Correspondent.)

ORE SHIPMENTS.—The total quantity of ore shipped from the mines at Rossland from January 1st to February 21st, inclusive, amounted to 8,092 tons. There were in addition 799 tons of ore milled during the same period, the latter by the O. K. Mining and Milling Company.

BRITISH GUIANA.

GOLD EXPORTS.—The quantity of gold entered for export in January was 5,262 crude oz., which compares with 3,425 oz. in January, 1896, showing an increase this year of 2,837 oz., or 82.5%. The exports for the month this year were equivalent to 4,648 fine oz., being valued at $96,065.

GERMANY.

BRUNSWICK.

SALT DISCOVERY.—Some time since the government undertook explorations in Brunswick for the purpose of testing the possible existence of deposits of potassium salts similar to those which have been mined at Stassfurt.

Bore holes have led to the discovery of a bed of rock salt at a depth of 860 to 1,550 ft., varying in thickness from 600 to 750 ft. Below this potassium salts have been found 240 ft. in thickness, and below this again a bed of rock salt, which has not been bored through. These results show that Brunswick is very rich in salt, but owing to the great initial expenditure required the government has decided not to work the deposits at present.

MEXICO.

NUEVO LEON.

Report comes from Monterey that a deal has been effected embracing the consolidation of the Carbonite, Trinidad and Aztec silver-lead mines, and the sale of the controlling interest in the Consolidated Aztec Mining Company stock to a local syndicate. The newly elected officers are: Francisco Armendaise, president; Thomas Mendirichaga, treasurer; Adolfo Zambrano, secretary. The new management will begin the construction of a system of aerial wires and cables to bring the ores from the several workings to a central point at the base of the mountain for transportation over a short surface tramway to the Mexican National Railroad, thence to Monterey smelters, 6 miles distant. Competent mining engineers report over 100,000 tons of ore in sight. Besides silver, the ore carries gold, lime and iron in combination, and is said to contain less than 1% of silica or other insoluble matter. For several weeks past Leon Signoret, representative of the Bank of London and Mexico, has been endeavoring to organize a new smelter company to operate in Monterey. On being advised of the Aztec combination he became associated with the syndicate, and now states that the necessary capital, $1,200,000, has been subscribed, and that the construction of the smelter will be carried on vigorously.

NEW SOUTH WALES.

BROKEN HILL PROPRIETARY COMPANY.—For the four weeks ending February 4th the report gives 27,591 tons of ore treated. The output of the refinery was 413 fine oz. gold, 584,655 fine oz. silver, 388 tons soft lead, 58 tons of hard or antimonial lead and 386 tons copper matte. The estimated contents of the matte were 59 tons copper and 38,838 oz. silver. This makes a product of 623,493 oz. silver in all.

NEW ZEALAND.

WAIHI GOLD MINING COMPANY.—For the year 1896 this company reports 33,750 tons ore treated, the yield in bullion amounting to $600,317, or an average of $17.79 per ton. The company paid four dividends during the year, amounting in all to $1.92 per share. For the month of January, 1897, there were 4,140 tons treated, yielding bullion worth $66.720, or $16.12 per ton.

NOVA SCOTIA.

DOMINION COAL COMPANY.—For the 12 months ending February 28th this company reports a total production of 1,067,087 tons of coal, which shows an increase of 252,509 tons over the previous year.

MINERAL PRODUCTION.—A statement of the production of the Province in 1896 was given the *Journal* for January 16th last. The corrected figures are now given by Mr. E. Gilpin, Jr., head of the Mines Department. The production of gold was 26,112 oz., an increase of 5,242 oz. over 1895. Of copper ore 10

tons were mined experimentally. The blast furnaces produced 31,091 tons of pig iron, using 75,295 tons of iron ore. Of manganese ore 120 tons were shipped. The coal production reached a total of 2,287,574 long tons. The coke made and used in the iron works was 48,440 short tons. Other mineral products were 175 tons of graphite ore, 135,000 short tons of gypsum, grindstone valued at $33,250, 24,132 short tons of limestone used as flux and 8,500 tons of limestone used for other purposes.

SOUTH AFRICA.

TRANSVAAL.

WITWATERSRAND CHAMBER OF MINES.—Negotiations have been opened with the Association of Mines in South Africa for a settlement of the difficulties which caused the secession of certain companies from the Chamber, and the formation of a new association. The prospect is that these will be successful, and that all the Witwatersrand companies will again be brought into one association.

LATE NEWS.

The Denver Engineering Works, of Denver, Colo., have completed a new furnace for the Loder Pyritic Smelting Company, and are now building a new 200-ton furnace for the Germania Smelting Company, of Salt Lake. They are working on a 100-ton cyanide plant for Idaho, and another for Valparaiso, Chile. This company has been making extensive improvements in smelting plants and plants for mining, milling, concentrating and treating ores. Their extensive business as consulting engineers materially assists them in designing the plants best suited to the locality and kind of ore to be treated. Mr. Frank E. Shepard, consulting mechanical engineer of these works, has just returned from a business trip to the smelters at El Paso and in Mexico.

KANSAS & TEXAS COAL COMPANY.—An explosion took place in mine No. 44, at Huntington, Ark., March 5th, killing one man and injuring 35 others, all of them seriously and some fatally. Different theories are advanced as to the cause of the accident. The general opinion appears to be that it was caused by a blast setting fire to the gas. The mine was very dry and dusty, and the furnace draught was not sufficiently strong to carry the dust out of the rooms and entries.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, March 5.

Statement of shipments of anthracite coal (approximated) in tons of 2,240 lbs., for the week ending February 27th, 1897, compared with the corresponding period last year:

	1897. Week.	1897. Year.	1896. Year.
Pennsylvania Railroad.....	57,096	669,163	607,067

PRODUCTION OF BITUMINOUS COAL in tons of 2,000 lbs. for week ending February 27th, and for years from January 1st, 1897 and 1896:

Shipped East and North:	1897. Week.	1897. Year.	1896. Year.
Allegheny, Pa.....	42,405	337,101	351,023
Barclay, Pa.....	1,274	7,453	7,666
Beech Creek, Pa.....	70,913	581,270	566,765
Broad Top, Pa.....	‡6,917	54,532	69,386
Clearfield, Pa.....	65,088	803,264	745,113
Cumberland, Md.....	58,997	477,636	371,806
Kanawha, W. Va	‡146,219	579,119	616,392
Phila. & Erie.....	5,735	138,635	8,327
Pocahontas Flat Top.....	†71,242	71,242	445,244
Totals.....	468,790	3,050,252	3,181,722

‡ For two weeks ending February 21st.
† For week ending February 13th.
§ For week ending February 20th.

Shipped West:	1897. Week.	1897. Year.	1896. Year.
Monongahela, Pa.....	23,499	213,833	140,661
Pittsburg, Pa.....	34,650	318,597	301,770
Westmoreland, Pa.....	33,940	287,115	291,083
Totals.....	92,089	819,545	756,514
Grand totals.....	560,879	3,869,797	3,918,236

Production of coke on line of Pennsylvania Railroad for the week ending February 27th, 1897, and year from January 1st, 1897, in tons of 2,000 lbs.: Week, 86,406 tons; year, 710,836; to corresponding date in 1896, 832,674 tons.

Anthracite.

There is no reason to believe that a change has taken place in trade conditions in this market since last week, and probably none will occur during the next fortnight. On all sides business is reported very dull, and this is further confirmed by observation. The sales agents are decidedly non-committal since the numerous questions were put to the trade by the Lexow committee 10 days ago. Questions that before were answered without hesitation are now answered evasively or not at all, so that information is difficult to obtain. That the interests of the trade in general are really the main interests of its various constituents is appreciated by all, but many of them allow some special interest to rule that does not harmonize, and this is the source of many past and prospective disagreements. Strenuous efforts are now being made by several of the companies to overcome differences, and their success or failure will mean much to the trade before another month has passed. A restricted output is recognized as of the greatest importance, and every precaution is to be taken that the allotted 2,500,000 tons to be mined during March shall not be exceeded. It is further stated that in recognition of the necessity for restriction the quantity of coal mined during February was so curtailed that the total for the first two months of the year will but slightly exceed 5,000,000 tons, and this regardless of the large excess mined in January. All of the sales agents maintain that they are obtaining the circular price for the coal they are selling, namely, $3.75 for broken, $4 for egg and chestnut, and $4.25 for stove, all f. o. b. Other sources, which we believe to be reliable, discredit these figures and place them at 25c. per ton less. It is certain that the companies are endeavoring to get as near the circular prices as they possibly can, and that if they fail it is because they are compelled by circumstances to make concessions; the failure, however, is common to all. Buyers, in expectation of spring prices, take only enough coal for present needs, knowing very well that if lower prices are not made for spring trade, they certainly will be no higher than they are now.

NOTES OF THE WEEK.

The Schuylkill Coal Exchange gives notice that the Philadelphia & Reading collieries drawn to return prices of coal sold in February, 1897, to determine the rate of wages to be paid, show an average price of $2.61, and the rate of wages to be paid for the last half of February and the first half of March, 1897, is 4% above the $2 50 basis.

Bituminous.

The Atlantic seaboard soft coal trade continues to show a slight improvement, and possibly the tone of the market is somewhat better than it was, probably because the larger part of the season contracts have been closed. This competition having been gotten out of the way, some of the first orders upon new contracts have appeared in the market, and to that, probably, can be attributed most of the continued improvement. The far East is sending a small quantity of orders to the shippers, but for this consuming territory it amounts to very little. Sound ports are taking some coal, but the appearance is that more coal is being forced on this locality than it can well handle and the natural result will be a falling off in the consumption later. New York harbor business is in a fair condition for the state of the trade.

In season contracts there is a continued closing up of the smaller sized ones, which do not create the same talk as the large ones, yet it seems the former really comprise the bulk of the trade. It looks as if some of the operators who have loaded up with contracts at low figures are not as happy as one is led to believe, as there are continued rumors of labor troubles during the season, which would be felt by these people considerably if they did not suffer heavy loss.

Transportation is not quite up to schedule time, but nobody is feeling the slight delay in shipments. Car supply is up to all demands. In the coastwise vessel market, vessels are beginning to come out of winter quarters and freights have dropped accordingly, as vessels on reaching the market have found little or no business to charter on, and have been obliged to take less than the current rates.

We quote current rates of freight from Philadelphia to Boston, Salem and Portland, 75c.; Portsmouth, 80c.; Providence, New Bedford and other Sound ports, 60c. Five cents above these rates is charged from the lower shipping ports.

Buffalo. March 4.

(From Our Special Correspondent.)

The anthracite coal trade is quiet with some signs of weakness in quotations. The weather last week closed very cold, moderated on Monday; since unsettled with occasionally heavy rain. The bituminous coal business is moderately active. Manufacturers are keeping their establishments going, although they are not rushed with orders. Indications of increasing demand are apparent; supply of bituminous up to the requirements of consumers. Dealers are as a rule firm in their views, claiming that as present rates are so low they cannot make any further concessions in prices.

Nothing definite as regards the opening of navigation, lake freight rates, etc. Vessel men say there is plenty of time yet for talk; action will be taken later.

The Pennsylvania Coal and Fuel Company, with headquarters at St. Paul, Minn., is the name of the new consolidation of the Pennsylvania & Ohio Company of Duluth, the Lake Superior Coal Company of Ashland, the Ashland Fuel Company and the Manitowoc Coal and Dock Company. The new institution has a paid-up capital of $500,000. The tonnage expected to be moved will be in the neighborhood of half a million tons annually.

Chicago. March 3.

(From Our Special Correspondent.)

Anthracite.—A couple of days only of cold weather during the past week had the effect of making sales of coal that never would have been made had it not been for a thermometer at almost zero. To be sure the sales were not numerous, nor were they for any great tonnage but they gave the week's trade a better aspect. There is but little coal moving now, and stocks in the yards of out-of town dealers have not been augmented to any extent. Anthracite coal prices are weak and concessions are constantly being made in order to get rid of an over-stock of coal. The circular rates are for grate, $5.35; egg, stove and chestnut, $5.60.

Bituminous.—Coal of all grades is neglected, and indications for an increased market are not bright. There is a great quantity of coal in this market at the present time, and the business is a very unprofitable one for the mines as well as the dealer. Prices were never worse than now, and in order to sell coal a buyer is given his own price.

Pittsburg. March 4.

(From Our Special Correspondent.)

Coal.—Business is very quiet; the lower markets are stocked with coal from the headwaters to the mouth of the Mississippi and prices are down to a very low figure. Coal producers are indifferent, whether the miners continue the strike or not. The miners want another conference; they have sent a circular letter to all the coal producers in the Pittsburg district, asking whether or not they are willing to go into a conference with the representatives of the miners to decide upon a wage rate for mining, ignoring all other questions; no date has been agreed upon for the conference. In the railroad district the battle between the operators and organized miners continues; the only mines where the men could be induced to sign ironclad agreements, based on a 60c. mining rate, are those of M. A. Hanna & Company. At other mines this move of the operators to forestall an agitation for higher wages on the part of the men has not been successful. Factories have placed large orders for coal lately.

Practical coal miners have leased the old Ward property near Elizabeth on the Monongahela River, for a term of years, and efforts will be made to lease additional property. The capital stock has been put at $4,000, divided into 80 shares of $50 each. A large contract that will require 15,000 bushels every 24 hours is being negotiated for. The mines are to be run on the co-operative principle.

Connellsville Coke.—The boom that was expected to arrive failed to put in an appearance but may come at some other time. The number of coke ovens in the Ninth District is 4,781, of which number 4,697 were operated some time during the year. There were no new ovens built in the district and not a great many important improvements. Electricity is becoming a motive power of considerable importance in the Ninth District, especially at the mines shipping coal. In the district during the year six mine locomotives were idle, 586 horses and mules and 180 boilers; the number of kegs of powder used is reported at 11,380.

Operations of the region this week show 10,489 ovens in blast, with 7,912 idle. There were 200 ovens fired during the week. The production for the week, estimated upon the ovens drawn, amounted to 105,663 tons, an increase of 5,377 tons; this is the largest weekly production of the year. The Bessemer Coke Company is putting up 20 more ovens at its plant in the Connellsville region; they have been running to their full capacity ever since they started, and are making coke of a superior quality. In the running order, 4,475 ovens made six days; 5,804 made five days; 135 made four days, and 25—the Semet-Solvey plant—seven days. Shipments amounted to 118,629 cars; increase, 409 cars, and were distributed as follows: To Pittsburg and way points, 2,518 cars, to points West, 2,990 cars; sent East, 1,082 cars; total, 6,590 cars. The asking price is $1.50@$1.75c., the selling price about $1.50.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, March 5, 1897.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending Mar. 6, 1896. F'ces.	Tons.	Mar. 5, 1897. F'ces.	Tons.	From Jan., '96. Tons.	From Jan., '97. Tons.
Anthracite.	55	35,435	31	18,690	339,703	172,886
Coke.....	140	166,830	106	141,800	1,632,179	1,269,714
Charcoal...	20	5,425	19	5,750	48,775	53,086
Totals ...	215	207,690	156	166,150	2,020,657	1,495,686

The trade has been generally quiet this week, and there is little especially new to report. The steel rail flurry is over, and apparently most of the large orders have been placed, though it is understood that several companies are still considering the amount of new work they will undertake this year, and cheap rails may have a good deal of influence on their decision. Outside of rails, the sales of finished material are increasing, especially in bar iron and wire goods.

The lake ore men decided nothing at their meeting in Cleveland on Monday, and adjourned until Tuesday, March 9th. The situation is not clear and it looks as if a prolonged conference might be needed to adjust matters.

The railroads announce a reduction in freights on iron and steel from Pittsburg westward. The new rates are on the basis of $2.20 per ton on pig iron and $2.50 on steel billets from Pittsburg to Chicago, with $1.80 for pig and $2 10 for billets from Mahoning Valley points to Chicago.

NOTES OF THE WEEK.

The Pennsylvania Steel Company reports that the total sales and deliveries in 1896 were $5,865,932, compared with $6,679,956 in 1895. Average number of employees 4,002, against 4,300 in 1895. Only one of four blast furnaces has been operated during the entire year. Product of this department was 85,000 tons against 185,000 in 1895. Output of Bessemer department was 112,000 tons. The output in 1895 was 157,000 tons. Open-hearth depart-

ment made 87,000 tons in 1896, against 122,000 tons in 1895. Tons of rails rolled in rail mill during first half of 1896 numbered 50,000; during latter half only 18,700 tons. The net earnings of the company were $80,692, against $121,657 in 1895. There was $194,001 paid for improvements and charged to expenses. The Maryland Steel Company shows a loss of $121,396, against a loss of $35,920 for 1895. The result of the operations of both plants, therefore, shows a net loss of $40,704, compared with a gain of $85,736 in 1895.

It is announced that negotiations among the car-wheel manufacturers have resulted in a combination of a number of the leading makers. Eight companies agreed to disband, surrender their charters and become consolidated into a new corporation, which was to operate all of the plants formerly operated by the several companies: The Allen Paper Car Wheel Company, of Illinois; the Page Car Wheel Company, of Cleveland; the Snow Car Wheel Company, of Ramapo, N. Y.; the Washburn Car Wheel Company; the McKee-Fuller Car Wheel Company, Fullerton, Pa.; the Standard Car Wheel Company, the National Car Wheel Company; the Boies Car Wheel Company, of Scranton, Pa. All the plants of the above companies were sold to the consolidated company known as the Steel Tired Wheel Company. The company secured its charter in New Jersey, but will have its head office in New York. The capital of the new company is $4,000,000. The officers are as follows: President, Mr. French, of Cleveland; first vice-president, Mr. Snow; second vice-president, Mr. Antes; general manager, Mr. Silverthorn. The indications are that some of the plants mentioned will be closed, at least temporarily.

New York. March 5.

We must report a better feeling in iron circles here this week, while prices appear to be steady. In the structural line we note the most activity, and beams are being sold in a fair way. Bridges are contemplated by several railroads in the neighborhood, and appropriations for 10 of these structures have been made by the city of Philadelphia. Another iron and steel bridge, for which bids are asked until March 10th, will be erected across Miller's River in Massachusetts.

Considerable business is offering for steel rails, and prices are said to be stiffening.

Many gas and water works are beginning to place contracts for pipe. Among them we understand the Consolidated Gas Company of New York has awarded two contracts this week. One was for 700 tons of pipe and went to the Warren Foundry and Machine Company, and the other was for a like quantity which was awarded to the McNeal Pipe and Foundry Company. The Boston Metropolitan Water-Works have placed four contracts, amounting in all to about 17,000 tons of pipe. R. D. Wood & Company, of Philadelphia, received three of these contracts, and the McNeal Pipe and Foundry Company, the other. The Auburn, N. Y., contract for a quantity of pipe has gone to R. D. Wood & Company. The Hawaiian government through the Consul General at this port is asking for bids until March 15th, for 4,140 ft. of 12-in. cast-iron water pipe.

With regard to our export trade, both iron and steel in manufactured form are finding an increasing market abroad. Last week Honolulu is said to have taken upward of $20,000 worth of hardware and supplies, together with light machinery. A quantity of wrought-iron pipe, boilers, pumps and other kinds of machinery will be shipped to Japan during this month. The Southern pig-iron export trade is almost featureless just now. Some dealers think that the British market is being overstocked. The current prices obtained for Alabama pig are said to be about 46s. per ton for good foundry iron, and about 44s. for forge iron. Some shippers are said to have acted rashly in their acceptance of contracts for pig iron to Belgium, where an import duty of 20 centimes is charged, which had not been included in the contract price.

A rumor is circulating that an order for 20,000 tons of pig iron for shipment to Calcutta, India, has been placed. As yet no one is willing to admit receiving it.

The Tennessee Coal, Iron and Railroad Company has just issued a neatly illustrated pamphlet, giving, among other things, some interesting statistics and a brief historical account of its properties.

Pig Iron.—The market is somewhat better in tone than last week, and furnacemen look forward to higher prices. With the exception of a sale of 1,000 tons of Sloss No. 2 Foundry iron at a shade lower than $7.50 at furnace; orders have been small in volume. We refer above to the exportation of Southern iron.

Quotations for Northern brands are $12@$12.50 for No. 1 foundry; $11.50@$11.75 for No. 2 foundry; $10.75@$11 for No. 2 plain, and $10.50@$11 for gray forge. For Southern iron we quote: No. 1 foundry, $11.50@$12; No. 2 foundry, $10.75@$11; No. 3 foundry, $10.25@$10.75; No. 1 soft, $10.75@$11; No. 2 soft, $10.50@$10.75; forge, $10.25@$10.50; basic pig, $10@$10.25. All prices are for tidewater delivery.

Cast-Iron Pipe.—Several fair-sized contracts have been let, as noted above, and others are pending. Prices are being shaded according to the buyer.

Spiegeleisen and Ferro-Manganese.—There is but little demand, and prices are $47@$47.50 per ton for imported 80% ferro-manganese and $19@$19.50 for 20% spiegeleisen.

Steel Billets.—Business is unchanged, and prices are $15.50@$16 per ton at mill.

Merchant Iron and Steel.—Sales are small, and prices fairly steady. For bars we quote: Common, 1·05@1·10c.; refined, 1·10@1·25c.; soft steel bars, 1·15@1·25c. Other quotations are: Steel hoops, 1·40@1·45c.; steel axles, 1·60@1·75c.; links and pins, 1·60@1·70c.; tire steel, 1·70c.; spring steel, 1·95@2·15c. All prices are for delivery on dock New York.

Plates.—Business is a little more active than last week, and we quote for universal mill plates 1·20@1·30c. For steel plates prices are: Tank, 1·20@1·30c.; boiler shell, 1·35@1·45c.; flange, 1·45@1·55c.; firebox, 1·65@1·75c., according to quality. Charcoal iron plates are 2·25c. for shell, 2·75 for best flange and 3·25 for firebox. Rivets are 3@3·25c. for iron and 2·10@2·25c. for steel. Prices are for tidewater delivery.

Structural Iron and Steel.—Business is increasing as spring approaches and we quote for angles, 1·20@1·30c.; tees, 1·60@1·70c.; channels, 1·70@1·75c. The price of beams, New York delivery, is 1·70c. for ordinary sizes, 1·85c. for 20-in., and 1·95c. for 24-in., car lots. For small quantities 0·05@0·10c. higher is asked.

Steel Rails and Rail Fastenings.—Standard section steel rails are quoted at $18@$20 at mill.

Quotations for rail fastenings are, angle bars, 1·15@1·25c.; spikes, 1·60@1·65c.; bolts, 1·85@1·95c. for square nuts and 1·90@2c. for hexagon nuts.

Wrought-Iron Pipe.—Trade continues quiet. Discounts are as follows for plain pipe, out of store: 1¼ in. and over, 67, 10, 10, 10, 10 and 10%; 1¼ in. and under, 57, 10, 10, 10, 10 and 10%. Galvanized pipe, 1½ in. and over, 55, 10, 10, 10, 10 and 10%; 1¼ in. and under, 50, 10, 10, 10, 10 and 10%. For fair-sized orders these discounts are made with an additional 5%. Boiler tubes, 1 in. to 2¼ in., 70, 10 and 5%; 2¼ in. up, 75 and 5%. Cold-drawn seamless steel tubes, 60%.

Nails.—The increasing demand has induced the mills to raise the price of wire nails, and we quote $1.60@$1.70 per keg, New York delivery; the former price can only be made on exceptionally large orders. Cut nails, on the other hand, are quoted at $1.35, same delivery.

Old Materials.—The market shows a better tone, and inquiries are still coming in from the export trade. Old iron rails are quoted at $12@$13, and old steel rails command $10.50@$11.50. Old wrought-iron pipe is quoted at $7.50@$8 per ton.

Cast Scrap.—Demand continues for railroad material, and prices for good machinery scrap are $9.50@$10.50 per ton; ordinary cast scrap, $8@$9.50; stove-plate and mixed, $6.50@$8. Old car wheels are $9.50@$10.50 per ton.

Buffalo. March 3.

(Special Report of Rogers, Brown & Co.)

Business continues to improve slowly. Consumers of pig iron are gradually increasing their melt, and, as very few have accumulated stocks, it necessitates more frequent ordering. As a rule, however, the transactions are small and at close prices. Our quotations below are on the cash basis f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, $12; No. 2 strong foundry coke iron, Lake Superior ore, $11.50; Ohio strong softener No. 1, $12.25; Ohio strong softener, No. 2, $11.75; Jackson County silvery No. 1, $14.25; Southern soft No. 1, $12; Southern soft No. 2, $11.50; Lake Superior charcoal, $14.

Chicago. March 3.

(From Our Special Correspondent.)

Pig Iron.—Pig iron as yet has not felt the improvement that was presumed would soon occur through the great sale of rails, but inquiry would indicate that larger buying will soon appear. The sales of the week have been mostly for small quantities, and in aggregate would be no more than the preceding week. Bessemer iron has been in better sale, and Lake Superior charcoal iron has sold better. Prices in both Northern and Southern irons have as yet not changed. We quote: Lake Superior charcoal, $13.50@$14; local coke foundry No. 1, $11.50@$12.00; No. 2, $11.00@$11.50; No. 3, $10.75@$11; local Scotch foundry No. 1, $11.50@$12; No. 2, $11@$11.50; No. 3, $10.75@$11. Southern coke No. 1, $11.15@$11.40; No. 2, $10.65@$11.15; No. 3, $10.40@$10.65; Southern No. 1 soft, $10.90@$11.40; No. 2 soft, $10 65@$10.90; Jackson County silveries, $14@$16; Ohio silveries No. 1, $15@$15.50; Ohio silveries No. 2, $14.50@$15.00; Alabama car wheel, $16@$16.50; coke Bessemer, $13.25@$13.75.

Bar Iron.—Some very good sales of bars have been made, and the week's business has been much better than for some time past. Car builders are the chief buyers at the present time. Common iron is quoted 1·25@1·30c.

Steel Rails.—The price now demanded in this market for steel rails is $21@24, and at those prices there is not much business being transacted. Most of the railroads have placed orders, and what is coming in now is limited to much smaller amounts.

Billets and Rods.—The market for both of these products remains unchanged, though prices have advanced on both to some extent. Billets are quoted $17.50@$18.50 and rods $24.50.

Structural Material.—A contract was let for 1,500 tons for a building at Fort Wayne, Ind. Track elevation will oblige some of the roads centering here to purchase considerable iron. The Northwestern Elevated Railroad has again commenced operations and progress in its construction will now be made with speed. Prices are unchanged. Quotations are: Beams and channels, 1·75@1·80c.; plates, 1·25@1·30c.; tees, 1·50@1·55c.; angles, 1·25@1·30c.

Plates.—Buying is not large, orders for limited quantities only having been received during the past week. The outlook for plates is better, and it is expected that trade will improve within the next few weeks. Quotations are: Tank steel, 1·25@1·30c.; flange steel, 1·35@1·45c.

Cleveland. March 3.

(From Our Special Correspondent.)

Iron Ore.—Practically nothing has been done during the week past, and the indications are that no larger volume of business will be transacted during the next week, as no agreement was reached at the much-advertised meeting of the Bessemer Iron Ore Association Monday. Captain L. C. Hanna, one of the executive officers of the association, said after the session that while the meeting had been thoroughly harmonious, no agreement was reached and an adjournment was taken until March 9. Meanwhile some of the consumers of ore say that the association will be dissolved, but it is generally understood among iron brokers that the members of the association will agree on prices. What ore was sold during the week was disposed of at the old price. The quotations follow: Standard hard speculars, Bessemer quality, $4.50@$5; standard hematites, Bessemer quality, $4@$4.50; standard hard hematites, non-Bessemer quality, $3.50@$4; standard soft hematites, non-Bessemer quality, $2.50@$3.25.

Pig Iron.—The transactions during the past week have been so few and small that the market can truthfully be spoken of as extremely dull. Prices, however, are steady. Following are the present quotations: Lake Superior charcoal, $13.50; Bessemer, $11@$11.25; No. 1 Foundry, $11.65; No. 2, $11.15; No. 1 Ohio Scotch, $11.15; No. 2, $10 65; Mahoning and Shenango Valley neutral mill irons, $9.75@$10; Mahoning and Shenango Valley red short mills, $9.75@$10.

Philadelphia. March 4.

(From Our Special Correspondent.)

Pig Iron.—Some quiet and big transactions in pig iron have been closed which are kept from the public. Some of the iron is for skelp, some for steel purposes. Moderate sales of both foundry and forge have been made daily. The only change noticed is that special inducements have been withdrawn. There are more buyers looking around for iron, and a number of brokers remarked to-day that these inquiries portended large purchases soon. The position of forge continues to be disappointing. Best brands were offered yesterday at $11. Foundry iron is stronger, but not particularly active. Bessemer is $12.50; Basic, $10.75; Forge, $11; No. 2 Foundry, $12, and No. 1, $13, with some variations, according to quality.

Steel Billets.—The possibility of stronger steel rail quotations has helped to harden the billet market, which is now quoting at $18 and even higher. The new freight rates on pig and billets may affect prices and business soon.

Merchant Bars.—The bar iron people are much disheartened over the sluggishness of trade. Prices are no lower, but large buyers might exact some concession if they were hard hearted enough to do so. The car builders have no news for us.

Sheet Iron.—The expected movement among large consumers has been delayed a week or two to see what happens. Prices have weakened, and manufacturers are not offering further inducements. Consumers are satisfied that there is very little in the talk about advancing prices.

Merchant Steel.—The only point made to-day among the handlers of steel is that the buying season opens next week, and they, therefore, expect to do some business.

Pipes and Tubes.—Manufacturers are content to do any little business at present quotations. Prospective buyers smile when warned that quotations will advance soon.

Skelp.—More skelp iron orders are due in a few days.

Plate and Tank.—Dearer steel has not made the slightest impression on the market. Quotations are the same. A couple fair-sized locomotive orders came in. We hear the locomotive builders are getting very busy, more business being sent to the mills and an improvement is thought by the brokers to be in sight. Tank is 1·25; universals, 1·30; shell, 1·35; flange, 1·50; firebox, 1 70, up.

Steel Rails.—Rumors got out to-day that new export orders were coming very soon. Home business has suddenly fallen to small proportions, but to offset this several large corporations are to decide this month how much new work they will do. Brokers do not think that $20 is likely to be insisted on as against offers at less.

Old Rails.—There is no important business to note yet, and $13 is quoted for iron. Steel are $12.

Scrap.—Actual sales are light, but there are symptoms of considerable business. Small dealers are not willing to let a customer slip, but at the larger yards desirable scrap is held very firmly, especially for railroad axles, springs and heavy steel scrap. There is not much doing in anything else.

Pittsburg. March 5.

(From Our Special Correspondent.)

Raw Iron and Steel.—The business developments of the past week have been of a very satisfactory description. The sweeping away of the pools has produced beneficial effects all round, has quickened activity in the iron and steel trades, and there have been heavy transactions in steel rails, billets and Bessemer pig, which include a large tonnage for export. The significant fact in this connection is that trade in the last two weeks of freedom from pool control has been more than 40% larger in Pittsburg than the shipments of last year. While the activity in the steel trade has been the notable commercial feature for some time, there have been important gains in other directions, which clearly show a general tendency to improvement in business. At leading points trade in all lines shows a healthy increase, and indications are very encouraging for a continued improvement. The heavy purchase of steel rails has straightened the iron and steel market.

While there is no big boom in trade, there are unmistakable signs of steady improvement in the market for iron and steel, and from the character of the inquiries and the extent of the actual business being done it is possible that the revival so long looked for by producers is close at hand. There are two branches of the iron trade that are busy—the manufacturers of billets and steel rails; in both instances heavy buying followed the disruption of the billet and steel rail pools and still continues. All forms of crude iron and steel materials are firmer, and in the case of Bessemer pig holders are asking a further advance; the same may be said of steel billets and rails.

The activity noted in our last continues; the volume of business was large with prices moving upward slowly, which is much better than a big boom and a bigger break down later. Billets are steady at $15.65@$16. Bessemer pig shows large sales at Valley furnace at $10.10@$10.30, with some furnaces holding out for more money. Freight from Valley to Pittsburg is 65c. per ton. In mill iron a slight improvement was perceptible in the demand; sales are at $9.50@$9.60. Steel rails are nominal at $17@$18 per ton. On the whole, the outlook for a big spring trade is very favorable.

Tons.	COKE, SMELTED, LAKE AND NATIVE ORE.	Cash.
10,000	Bessemer, April, May, June, Valley	$10.25
5,000	Bessemer, Mar., April, Valley	10.30
5,000	Bessemer, Mar., Valley	10.25
5,500	Bessemer, Mar., April, Valley	10.25
3,000	Bessemer, Mar., April, May, Valley	10.15
3,000	Bessemer, Mar., April, Valley	10.25
3,000	Bessemer, Mar., April, May, Valley	10.25
3,000	Bessemer, Mar., April, Valley	10.20
2,500	Bessemer, Mar., Valley	10.25
2,000	Bessemer, April, May, Valley	10.25
2,000	Bessemer, Mar., April, Valley	10.25
1,500	Bessemer, Mar., April, Valley	10.25
1,000	Bessemer, Mar., April, Valley	10.25
1,000	Mill Iron, Mar., April, Pitts	9.85
1,000	Mill Iron, prompt, Pitts	9.50
300	Bessemer, spot, Pitts	10.90
250	No. 2 Foundry, Pitts	11.25
	CHARCOAL.	
400	Cold Blast, Pitts.	$22.00
75	No. 2 Foundry, Pitts	15.30
50	Cold Blast, Pitts.	22 50
50	No. 1 Foundry, Pitts	16.00
	BLOOMS, BILLETS, SLABS.	
1,500	Billets, March, April, May, June, Pitts	$15.65
1,500	Billets, April, May, June, Pitts	15.75
1,500	Billets, March, April, Pitts	15.80
1,000	Billets, April, Pitts	16.00
500	Billets, March, Pitts	15.75
	SKELP IRON.	
500	Wide grooved, Pitts	$1.10 4 m.
300	Narrow grooved, Pitts	1.10 4 m.
280	Sheared, Pitts.	1.30 4 m.
	SKELP STEEL.	
600	Narrow groov'd, Pitts.	$1.09 4 m.
500	Shear d, Pitts.	1.10 4 m.
300	Wide grooved, Pitts	1.00 4 m.
	SHEET BARS.	
1,200	Long length, delivered, Pitts.	$18.63
	FERRO-MANGANESE.	
300	80%, delivered, Pitts	$46.00
	MUCK BAR.	
500	Neutral, delivered, Pitts	$19.50
	BLOOMS, BILLETS, BAR ENDS.	
1,000	Billet ends, delivered, Pitts.	$12.00
	STEEL WIRE RODS.	
580	Delivered, Pitts.	$21.50
	OLD RAILS AND SCRAP.	
300	Steel Rails, gross, Pitts	$10.50
200	No. 1 Cast, gross, Pitts	9.00
100	No. 1 Wrought, gross, Pitts	12.00
100	Wrought trimings, net, Valley	6.75
100	Cast borings, gross, Valley	6.75
50	Cast scrap, gross, Pitts	9.50

METAL MARKET.

NEW YORK, Friday Evening, March 5, 1897.

Gold and Silver.

Prices of Silver per Ounce Troy.

February.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in $1.	March.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in $1.
27	4.87	29¼	64⅝	.500	3	4.87¼	29⅛	64	.495
1	4.87¼	29⅛	64⅛	.499	4	4.87¼	29⅛	64	.495
2	4.87¼	29 1/16	64⅛	.496	5	4.87¼	29⅛	64	.495

Owing to rumor that Japan was going on a gold basis, supported by the statement that the Minister of Finance had prepared a bill for the Japanese Parliament to discuss, advocating some change in current policy, silver became weak, the Eastern banks withdrawing from the market. The price fell ⅝d., to 29⅝d. At this figure the inquiry is moderate, and tendency for the moment is toward a further shading in the rates.

The United States Assay Office in New York reports the total receipts of silver at 102,000 oz. for the week.

Average Monthly Prices of Silver

In New York and London, per ounce Troy, from January 1st, 1897, and for the years 1896 and 1895.

Month.	1897.		1896.		1895.	
	London. Pence.	New York. Cents.	London. Pence.	New York. Cents.	London. Pence.	New York. Cents.
January	29·74	64 79	30·69	67·13	27·36	59·69
February	29·68	64·67	31·01	67·67	27·47	59·90
March	....	....	31·34	68·40	28·33	61·98
April	.....	.....	31·10	67·92	30·39	66·61
May	.....	.....	31·08	67·88	30·61	66·75
June	.....	.....	31·46	68·69	30·47	66·64
July	.....	.....	31·45	68·75	30·48	66 75
August	.....	.....	30·93	67·34	30·40	66 61
September	.....	.....	30·19	65 68	30·54	66·90
October	.....	.....	29·68	65·05	30·89	67·64
November	.. ...	.....	29 46	64 98	30·79	67·42
December	.....	.....	29·70	65·24	30·40	66 47
Year	.....	.....	30·67	67·06	29·53	65·28

The New York prices are always per fine ounce, or ounce of pure silver; the London quotation is per standard ounce, or for metal ·925 fine.

Gold and Silver Exports and Imports

At all United States ports, January, 1897, and years from January 1st, 1897 and 1896:

	Coin and bullion.		In ores.			Total excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.		
GOLD						
Jan..	$371,944	$556,621	$70,411	$209,055	I.	$323,321
1897..	371,944	556,621	70,411	209,055	I.	323,321
1896..	10,566,526	10,367,940	5,002	179,012	E.	24.576
SILV.						
Jan..	3,997,754	877,067	156,903	1,875,150	E.	1,402,440
1897..	3,997,754	877,667	156,903	1.875,150	E.	1,402,440
1896..	4,903,299	1,057,597	85,400	1,433,622	E.	2,497,480

This statement includes the exports and imports at all United States ports, the figures being furnished by the Bureau of Statistics of the Treasury Department.

Gold and Silver Exports and Imports, New York

For the week ending March 5th, 1897, and for years from January 1st, 1897, 1896, 1895, 1894:

	Gold.		Silver.			Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.		
We'k	$360,310	$222,536	$615,904	$38,637	E.	$615,041
1897..	786,661	704.411	6,981,827	396,732	E.	6,661,345
1896..	9,748.885	15,915,833	7.155,245	306,001	E.	68 ,296
1895..	27,560,978	8,075,726	5,676,502	274,014	E.	24,887,740
1894 .	3,827 848	2,411,831	9,115,353	264,499	E.	10,265,871

Of the gold exported for the week, $23,410 went to London, $190,000 to France, $900 to Turk's Island and the remainder to the West Indies; of the silver $2,150 went to Germany, $2,045 to South America, and the balance to London. The gold and silver imported came chiefly from the West Indies.

FINANCIAL NOTES OF THE WEEK.

There is nothing especially new in the general condition of business. Some improvement is manifest here and there, but there is a widespread disposition to wait and see what the new Congress will do at the extra session which, it is understood, will be called at an early date. The inaugural address of the new President this week is conservative in tone and gives satisfaction from its promise of a moderate foreign policy. The President evidently believes in the appointment of a commission to consider the currency question. He believes, however, that the question of increased revenue demands first consideration. Upon the whole, he said about what was generally expected.

A very large transaction was closed in New York this week, when the Lake Shore & Michigan Southern Railway Company placed an issue of $50,000,000 in 3½% mortgage bonds at about par with a syndicate of banking houses. These bonds are not all to be issued at once, but are to replace the present bonded debt of the company, which includes various issues falling due at different dates from 1897 to 1903. As these old bonds bear some 6% and some 7% interest, the company will save a large amount yearly.

The statement of the United States Treasury on Thursday, March 4th, shows balances in excess of outstanding certificates as below, comparison being made with the statement for the corresponding date last week:

	Feb. 25.	Mar. 4.	Changes.	
Gold	$148,244,989	$148.793,731	I.	$548,742
Silver	19,784,879	18,319,992	D.	1,464,887
Legal tenders	9,113,391	9,689,491	I.	576,190
Treasury notes, etc.	32,952,821	31,872.148	D.	1,080,673
Totals	$210,095,990	$208,675,362	D.	$1,420,628

Treasury deposits with national banks amounted to $16,201,370, an increase of $14,867 during the week.

Total United States Treasury notes issued under act of July 14th, 1890, in general circulation and in the Treasury, $117,550,280. Against these are held in the Treasury 9,158,048 coined standard silver dollars and silver bullion purchased at a cost of $108,392,232, making a total of $117,550,280.

The following statement from the Treasury Department shows the money in circulation in the United States, on March 1st, 1897:

	Treasury.	Circulation.	Total.
Gold coin	$139,356,403	$516,315,696	$655,672,099
Stand. sil. dollars	390,939,629	55,378,762	446,318,391
Sub. silver	15,805,023	60,709,595	76.514,618
Gold cert	1,501,970	37,544,819	39,046,789
Silver cert	9,876,033	363,709.501	373,585,504
Treas'y. notes, 1890	32,003,659	85,546,621	117.550,280
U. S. notes	85,946 400	260,734,616	346.681.016
Cur'y. cert	270,000	76.525,000	76,795,000
Nat. bank notes	15,095,981	219,230,343	231,2 6,327
Totals	$690,705,671	$1,675,691,953	$2,366,460,024

The total circulation is estimated at $23.14 per capita. During February there was a net increase of $9,717,265 in the circulation.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending February 27th, gives the following totals, comparisons being made with the corresponding weeks in 1896 and 1895:

	1895.	1896.	1897.
Loans and discounts	$481,704,200	$462,521,700	$437,609,700
Deposits	528,440,800	489,612,200	573,769,300
Circulation	12,083,500	13,619,600	16,491,100
Reserve:			
Specie	69,592,500	67,304,000	83,940,900
Legal tenders	90,572,200	86,521,200	117,022,400
Total reserve	$160,164,700	$146,825,200	$200,963,300
Legal requirement	132,110,200	122,403,050	143,442,325
Surplus reserve	$28,054,500	$24,422,150	$57,520,975

Changes for the week this year were increases of $1,098,700 in deposits, $1,123,900 in specie, $1,005,800 in legal tenders, and $1,855,025 in surplus reserve; decreases were $1,137,900 in loans and discounts, and $122,300 in circulation.

The following table shows the specie holdings of the leading banks of the world at the latest dates covered by their reports. The amounts are reduced to dollars and comparison is made with the holdings at the corresponding dates last year:

	Gold.	Silver.	Total.
Asso. Banks of New York	.....	.....	$83,940,900
1896	.....	....	6 ,304.000
Bank of England	$195.146,530	.....	195,146,530
1896	244,785,745	.....	244,785,745
Bank of France	382.950,000	$246,127,800	629,077,800
1896	390,356,021	249,047,446	639,403,467
Imp. Bank of Germany	.....	.....	228 970,000
1896	.....	.....	236,640,000
Austro-Hungarian Bank	154,800,000	63,308,000	218,108,000
1896	127,110,000	63,458,000	190,568,000
Netherlands Bank	13,164.000	34,644,000	47,808,000
1896	14,013,000	34,509,000	48,522,000
Belgian National Bank	.....	.....	20,625.000
1896	.....	.....	18,936 000
Bank of Spain	42,642,000	54,093,000	96,735,000
1896	40,022,000	52,354,000	92,376,000
Bank of Italy	61.000,000	11,535,000	72,535,000
1896	60,125,000	10,125,000	70.250,000
Imp. Bank of Russia	518 355,000	.....	518,355,000
1895	395,035,000	....	395,635,000

The return for the Associated Banks of New York is of date February 27th; all the others are of March 4th, except the Bank of Italy, January 20th, and the Bank of Russia, December 16th-28th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England and the Bank of Russia report gold only. The Imperial Bank of Germany and the Belgian National Bank do not report gold and silver separately.

Shipments of silver from London to the East for the year up to February 18th are reported by Messrs. Pixley & Abell's circular as below:

	1896.	1897.	Changes.	
India	£485,998	£620.300	I.	£134,302
China	84.500	19.550	D.	64,950
The Straits	76,482	35,493	D.	40,989
Totals	£646,980	£675,343	I.	£28,363

Arrivals for the week this year were £214,335 in bar silver from New York, £1,000 from the River Plate, and £20,000 from the West Indies, a total of £235,335. Shipments were £90,000 in bar silver to Bombay, £6,693 to Colombo, £3,000 to Madras, and £22,700 to Calcutta, a total of £122,393.

Indian exchange has again fallen, in consequence of a lighter demand, and the average price realized for Council bills in London was 15·06d. per rupee. The India Council has decided to reduce the amount of bills offered to 40 lakhs weekly.

The coinage executed at the mints of the United States during February and the two months of 1897 is reported by the Treasury Department as below:

Denominations:	February. Pieces.	February. Value.	Two months. Pieces.	Two months. Value.
Double eagles...	497,350	$9,947,000.00	881,450	$17 629,000.00
Eagles....	20,500	205,000.00	32,500	325,000 00
Qr. eagles	.....	.....	568	1,420.00
Total gold	517.850	$10,152,000.00	914,518	$17,955,420 00
Dollars...	1,340,000	$1,340,000.00	3,152,000	3,152,000 00
Halves...	58,000	29.000.00	150,000	75,000.00
Quarters.	426,817	106.700.25	734,817	183,7'0.25
Dimes....	440,934	44,093.40	738,934	73,893.40
T'l silver.	2,265,751	$1 519,793.65	4,775,751	$3,484,593.65
Five cent	1.023,113	$51.155.65	2.113.113	$105,655.65
One cent.	3,493,371	34,933.71	6 343,371	63,433.71
T'l minor	4,516,484	$86,089.36	8,456,484	$169,089.36
T'l c'in'ge	7.300,085	$11,757,883.01	14,146,753	$21,609,1o3.01

The coinage in February was about up to the average, allowance being made for the smaller number of working days in the month.

It is announced that Japan has decided to adopt the gold standard, and that the coinage of gold will begin at once, in order that the change may be made in October. The unit will be the gold yen, worth about 99c., and the smallest gold coin will be the five-yen piece. The ratio between silver and gold will be 32½ : 1. Japan has already a considerable supply of gold, and will receive more from the Chinese indemnity payments.

Prices of Foreign Coins.

The following are the latest market quotations for the leading foreign coins:

	Bid.	Asked
Mexican dollars	$0.50½	$0.51½
Peruvian sole- and Chilean pesos	.45½	46½
Victoria sovereigns	4.86	4.90
Twenty francs	3.86	3.90
Twenty marks	4.74	4.80
Spanish 25 pesetas	4.78	4.85

Other Metals.

Copper.—The market is lifeless and of a dragging nature. Prices, however, are fairly well maintained; not that they were given any support from consumers, but producers are not willing to make any concessions whatsoever. Judging from the fact that exports have lately shown a material falling off, it would seem as though manufacturers abroad had soon again to enter the market. The moment they do, it will have the effect of creating a much firmer tone, especially if such renewed demand is accompanied by orders from manufacturers at home, who too will soon have to lay in new supplies. Very little business has been transacted during the week, and values are, therefore, more or less nominal. We quote Lake 11⅞c., electrolytic in cakes, wirebars or ingots 11⅜c., cathodes 11⅛c., and casting 11¼c.

The foreign market has displayed more signs of weakness than for some time past, but that is attributed to the political troubles, which are just now a disturbing element. The statistical position continues very favorable indeed, and the stock of g. m. b.'s at the end of last month again showed an improvement, though only a small one, of 100 tons. The closing quotations are: Spot, £50 10s. @£50 12s. 6d., and three months prompt, £50 17s. 6d. @£51. For refined and manufactured we quote: English tough, £53@£53 5s.; best selected, £53 10s.@£54; strong sheets, £60 10s.; India sheets, £57 10s.; yellow metal, 4⅞d.

Tin.—Values here have suffered a decline in sympathy with the lower quotations cabled from abroad, but at the close there seems to be a little more stability to the market. Consumption in this country continues to be very good indeed, and the prospects in this direction for the future are not less favorable. Spot supplies continue to be very scarce indeed, and each arrival is shipped from dock into consumption. We quote spot and March, 13·50c., and April, May and June, 13·55c.

The foreign market, which closed last week at £61 2s. 6d.@£61 5s. for spot, opened on Monday at £60 17s 6d.@£61 for spot, but closes to day at £60 5s.@£60 7s. 6d. for spot and £60 17s. 6d.@£61 for three months prompt. This decline is evidently the result of a slump in silver.

The arrivals of tin in the United States for the two months ending February 28th are estimated at 2,545 tons, and the consumption at 2,800 tons. The visible stocks of tin on March 1st were, in long tons:

	Store.	Afloat.	Totals
London	18,278	4,575	22,853
Holland, Banka and Billiton	3,900	1,800	5,700
" Straits	868	971	1 839
U. S., except Pacific ports	1,746	1 680	3.426
Totals	24,792	9,026	33,818

The total visible stocks show an increase of 1,486 tons as compared with February 1st, and of 2,247 tons as compared with March 1st, 1896.

Lead has unquestionably been the firmest metal on the list. The eager demand has become accentuated, and supplies continue to be inadequate. The result is an advance to 3·40c., with the prospects of a still further rise

The foreign market has been subject to but narrow fluctuations and closes steady at £11 12s. 6d. for Spanish and £11 15s. for English.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Pig lead continues to advance slowly and there is no diminution in the strength of this metal. Stocks are light and the demand is fairly active. Latest sales are on a basis of 3·15c. for Missouri and 3·17 @3·20c for argentiferous.

According to the statement of the New York Metal Exchange, imports of foreign lead into the United States in January were 6,404 long tons. Exports amounted to 2,819 tons, and the quantity of foreign lead remaining in bond on February 1st was 5,131 tons.

Spelter has been quiet but steady at about 3·85c. in St. Louis and 4·10c. in New York.

The foreign market is somewhat easier, good ordinaries being quoted £17 8s. 9d. and specials 2s. 6d. higher.

Antimony.—No change is reported. Cookson's is 7¼c.: Hallett's, 7c.; U. S. Star, 7c., and Japanese, 6¾c.

Nickel.—Business is only moderate, but prices are unchanged. We quote for ton lots 33@36c. per lb., with 37@39c. for smaller orders. London prices are steady at 14@15d. for large orders and 15@16½d. for small lots. The New York price is about on a parity with London, allowance being made for the duty of 6c. per lb. here. The Paris quotation is 4 fr. per kilo, equivalent to about 36c. per lb.

Platinum.—There is no change to be noted and prices are firm at $14.50@$15.50 per oz., New York. London quotations are 57s. 6d.@59s. per oz.

For chemical ware, best hammered metal, Messrs. Eimer & Amend, New York, furnish the following quotations, the prices given being respectively for orders of over 250 grams, for orders of over 100 grams and less than 250 grams, and for orders of less than 100 grams: Crucibles and dishes, 52c., 54c. and 56c. per gram. Wire and foil are 49c., 50c. and 51c. per gram. The current retail price for crucibles is 60c. per gram.

Quicksilver.—The New York quotation has been raised 50c., and is now $38.50 per flask. San Francisco prices are $38. The London price has been increased 2s. 6d., to £7 per flask, with £6 18s. 9d. named from second hands.

The Minor Metals.—Quotations for these metals are given in the table below, the prices being for New York delivery:

Aluminum:	
No. 1. 98% pure ingots for re-melting, per lb	37@42c.
No. 2, 94% pure, " " "	31@34c.
Ingots from scrap, per lb	30c.
Rolled sheets, per lb	46c. up.
Aluminum-nickel casting metal, per lb	35@40c.
Bismuth, per lb	$1.30@$1.80
Phosphorus, per lb	50@55c.
Platinum, per oz	$14.50@$15 50
Tungsten, pure powder, per lb	70c.
Tungstic acid, per lb	45c.
Ferro-tungsten, 60% in ton lots, per lb	60c.

Variations in price depend chiefly upon the size of the orders.

Average Monthly Prices of Metals

In New York, for the years 1897 and 1896; in cents per pound.

Month.	Copper. 1897.	Copper. 1896.	Tin. 1897.	Tin. 1896.	Lead. 1897.	Lead. 1896.	Spelter. 1897.	Spelter. 1896.
Jan	11 75	9·87	13·44	13 02	3·04	3 08	3·91	3·75
Feb	11·92	10·64	13·59	13 44	3·28	3·19	4·02	4·03
March	.....	11·03	.....	13·30	.....	3·14	.....	4 20
April	.....	10·98	.....	13·34	.....	3·07	.....	4 07
May	.....	11·15	.....	13 51	.....	3·03	.....	3·98
June	.....	11 67	.....	13·59	.....	3·03	.....	4 10
July	.....	11·40	.....	13·63	.....	2 96	.....	3·97
August	.....	10 98	.....	13 49	.....	2·73	.....	3·76
Sept.	.....	10·66	.....	13·15	.....	2·77	.....	3·60
October	.....	10 66	.....	12·94	.....	2 80	.....	3·72
Nov.	.....	11·23	.....	13·09	.....	2·96	.....	3 99
Dec	.....	11·28	.....	12·96	.....	3 04	.....	4·14
Year	.....	10·88	.....	13·29	.....	2·98	.....	3·94

Imports and Exports of Metals.

New York.*	Week, Feb. 25. Expts.	Week, Feb. 25. Impts.	Year, 1897. Expts.	Year, 1897. Impts.
Aluminum ..... lbs.	.....	.....	.....	.....
Antimony ore....short tons	.....	28	.....	81
" regulus. . casks	.....	.....	.....	81
Brass, old.....short tons	12	.....	45	95
Copper, fine .....long tons	†2,046	58	11.239	257
" matte .... " "	†106	40	2,457	141
" ore..... " "	.....	.....	.....	.....
" sulphate.. " "	51	.....	2,089	.....
Iron ore..... " "	.....	.....	.....	.....
" pigs, bars, rods..... " "	35	.....	1,689	1,197
Iron pyrites..... " "	.....	.....	.....	2,670
" sulphate..... " "	.....	.....	.....	.....
Ferro-mangan'se " "	115	.....	167	52
Ferro-silicon..... " "	.....	.....	.....	.....
Manganese ore.. " "	.....	.....	.....	421
Spiegeleisen..... " "	.....	30	.....	276
Lead bullion..... " "	†450	394	4,824	6,369
" pigs and bars " "	.....	.....	.....	.....
Magnolia metal... " "	.....	.....	57	.....
Nickel..... " "	35	.....	53	5
Steel, billets, rods. " "	528	618	2,774	4,032
Tin..... " "	.....	†255	348	1,677
Tin dross..... " "	.....	.....	28	.....
Tin and black plates, boxes.	.....	†25,146	.....	165,321
Zinc dross..... long tons	32	.....	74	.....
Zinc (spelter).....long tons	†735	.....	1.111	745

*Metal Exchange Reports. † Week ending March 4th.

Baltimore.**	Week, Mar. 4. Exp.	Week, Mar. 4. Imp.	Year, 1897. Exp.	Year, 1897. Imp.
Bismuth metal, cases	.....	.....	.....	.....
Chrome ore..... long tons	.....	.....	.....	.....
Copper, fine..... " "	1,339	.....	6,574	.....
" matte..... " "	.....	.....	.....	.....
" sulphate.. " "	35	.....	872	.....
Iron ore ..... " "	.....	3,149	.....	29,972
" pigs, bars, ingots, blooms. " "	.....	.....	80	858
Iron oxide.....bags	.....	.....	.....	.....
" pyrites.....long tons	.....	.....	.....	.....
Ferro-manganese ..... " "	.....	.....	739	.....
Ferro-silicon..... " "	.....	.....	.....	23
Lead.....	20	.....	20	.....
Limestone.....short "	.....	.....	.....	.....
Manganese metal, long "	.....	.....	21	1,610
Spiegeleisen ..... " "	.....	100	.....	360
Steel..... " "	300	.....	660	197
Steel wire, bundles.....	.....	819	57	3,492
Tin, long tons.....	.....	.....	167	191
Tin and black plates, boxes	.....	2,781	.....	7,298
Zinc (spelter) long tons	.....	.....	2	.....

**From our special correspondent.

Philadelphia.††	Imports. Week. Feb. 26.	Imports. Year, 1897.
Antimony, casks	.....	2,700
Copper ore, long tons	.....	.....
Ferro-manganese, long tons	.....	.....
Ferro-silicon	.....	.....
Iron ore, long tons	9,440	38,395
" pig " "	.....	.....
" pyrites, long tons	.....	.....
" and steel scrap, long tons	.....	.....
Manganese ore, long tons	.....	.....
Spiegeleisen " "	.....	.....
Tin ..... " "	.....	125
Tin and black plates, boxes	2,193	3,961

†† From New York Metal Exchange Reports.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, March 5.

Heavy Chemicals.—A feeling of expectancy pervades this market, which is developing into a belief that better things are soon to come. Just at present, however, very little is doing, and everybody reports business as very quiet. Slight changes have occurred in the prices of several products which have been duly changed in the following figures.

An item has been published in the daily papers to the effect that a plant is to be established at Midland, Mich., for the manufacture of bleaching powder by a newly discovered process. Inquiry shows that this report is generally discredited in the trade.

We quote: Caustic soda, 60%, $2.22½@$2.42½; 70·74@76%, $2 12½@$2.22½ per 100 lbs. Alkali, 58%, 70@75c. for 50-ton lots and over, and 80@90c. for smaller quantities; 48%, $1@$1.20 for jobbing lots. Caustic soda ash, 48°, $1 50@$1.70. Bleaching powder, prime brands, $1.75@$1.87½; Continental, $1.57½@$1.70 per 100 lbs. Bicarb. soda, English, 1·75@2c. per lb.; American, bulk, $1.50@$3.50 per 100 lbs., according to make. Sal-soda, English, 62½@67½c.; American, 55@65c. (in barrels), 80c. (in kegs) per 100 lbs. Hyposulphite of soda, 1·60@1·80c. in casks; 1·70@1·95c. in kegs. Chlorate of potash, 7⅝@8¼c., according to quantity.

Acids.—A quiet week in acids is reported by all dealers. The market remains firm, however, but aside from the special conditions noted last week, is without feature. Quotations per 100 lbs. in New York and vicinity in lots of 50 carboys or over are as follows: Acetic acid, commercial No. 8 (in barrels), $1.40@$1.50; in carboys, $1.50@$1 65; redistilled, 28%, in bbls., $1.70@$1.80; in carboys, $1.90@$2.05; muriatic acid, 18°, 75@85c.; 20°, 85@95c.; 22°, $1.15@$1.25, according to make and quantity. Nitric acid, 36°, $3.50@$4; 40°, $4@$4.50; 42°, $4 50@$5.50. Oxalic acid, $7.25 ex-dock and $7.50 ex-store. Mixed acids, according to mixture. Sulphuric acid, 66°, 85c.@$1 in carload lots, 10@15c. higher for small quantities Chamber acid, $6@$6.50 per ton at factory. Blue vitriol, $4@$4.25, according to grade and order.

Brimstone.—During the greater part of the week brimstone was obtainable on spot at $20¼, and even $20¼ per ton, for best unmixed seconds, but now it has taken a sudden advance to $21½ for spot and also to arrive. Thirds are $1 per ton less. A fair demand is reported.

Fertilizing Chemicals.—This market continues quiet. A number of sales have been made in the South from which, it was expected, the demand would end with February, but this part of the country still remains in the market as a buyer of goods. We quote:

Sulphate of ammonia, gas liquor, $2.27½ for shipment, and $2.25 for spot; bone, $2.10@$2.15 per 100 lbs. Dried blood, high grade Western, $1.80 per unit New York; f. o. b. Chicago, $1.50 per unit; low grade, fine ground, Western, $1.47½@$1.50 f. o. b. Chicago. Azotine, $1.70@$1.75 basis New York. Concentrated phosphate (30% available phosphoric acid), 57½c. per unit. Acid phosphate, 13%@15%, av. P_2O_5, 54@65c. per unit at sellers' works in bulk. Dissolved bone black, 17%@18% P_2O_5, 85c. per unit. Acidulated fish scrap, $10, and dried scrap $19.50@$20, f. o. b. fish factory. Tankage, high grade, $14@$14.25 per ton; concentrated, $1.35 per unit, f. o. b. Chicago; New York,

$19@$20; low grade, $18@$19. Bone tankage $19@$20; ground bone, $21@$23. Bonemeal, $20@$22.50.

Sulphate of Potash: 90%, New York and Boston, $1.96½; Philadelphia, Baltimore and Norfolk, $1.98; Southern ports, $2.

Double Manure-Salt: 1·01c., basis of 48% chlorate high grade (basis 90%), 1·99½@2·03c., in bulk, 24@36% per unit O. P., 36½@38c.

Muriate of Potash: We quote: 1·75c. at New York and Boston, 1·76½c. Philadelphia, Baltimore and Norfolk, and 1·81½c. Charleston, Savannah, Wilmington and New Orleans, for 80@85% basis of 80%, in lots of 50 tons and upward.

Kainit.—Invoice weights, as taken at port of shipment, per ton of 2,240 lbs., testing 12·4% actual potash, equivalent to 23% sulphate of potash, $8.55. Actual weights, ex-vessel at port of New York per ton of 2,240 lbs. (testing as before), $8.80.

These prices for the potash salts and kainit are for contracts made before April 1st; after that date they will be 3c. per 100 lbs. higher.

Nitrate of Soda.—The *O'Brien* has just arrived with a cargo of 13,000 bags. Trade is fair, but prices have declined slightly from last week. For spot sales, 1·90@1·92½c. is asked, and 1·85c. to arrive.

Messrs. Mortimer & Wisner, the well-known brokers of this city, send us the following statement of nitrate of soda, issued under date of March 1st, 1897.

	1897.	1896.	1895.
	Bags.	Bags.	Bags.
Imported into Atlantic ports from West Coast S. A., from Jan. 1, 1897, to date	94,191	166,164	113,725
Stock in store and afloat March 1, 1897, in New York	121,366	89,781	68,460
Boston	5,725	.....	1,782
Philadelphia	.....	140	888
Baltimore	8,000	4,000	250
Norfolk, Va	.....	581	1,600
Charleston	.....	.....	2,500
To arrive, due June 15, 1897.	157,000	300,000	232 000
Vis. supply to June 15, 1897.	292,091	394,505	377,480
Stock on hand Jan. 1, 1897.	123,593	53,839	58,367
Deliveries past month	29,742	63,019	25,781
Deliv. since Jan. 1 to date.	82,693	124,298	103,632
Total yearly deliveries	.....	746,264	828,042
Prices current March 1	.90@1.92½	1.70	1.72½

NOTES OF THE WEEK.

We note an importation of 2,426 tons crude brim stone at Baltimore during the past week.

Liverpool. Feb. 24.

(Special Report of Joseph P. Brunner & Co.)

Rumors are current that negotiations are pending between the principal chemical manufacturers here and abroad, as regards a working arrangement, with a view to placing prices on a more remunerative basis. No details have been allowed to transpire up to the present, but, although prices may be said to be nominally unchanged, makers are declining to give any firm offers. Last week, the United Alkali Company made their dividend announcement, for the 12 months ending December 31st last. In addition to the usual 7% on the preference stock, they have declared a dividend of 4s. per share on the ordinary stock, equal to 2% per annum and carry forward about £40,000. Taking into account the depressed state of trade during last year, the result is considered satisfactory.

Soda ash is more inquired for, in view of the negotiations we have named, but quotations are nominally unchanged. We quote range for tierces, as to market, about as follows: Leblanc ash, 48%, £4@£4 5s. per ton; 58%, £4 5s.@£4 10s. per ton, net cash. Ammonia ash, 48%, £2 15s.@£3 10s. per ton; 58%, £3@£3 15s. per ton, net cash. Bags 5s. per ton under price for tierces. Special terms given for American business.

Soda crystals are steady at £2 5s.@£2 7s. 6d. per ton, less 5% for barrels and 7s. less for bags.

Caustic soda is inclined to harden, sellers preferring to hold aloof pending developments. Quotations vary according to export market; nominal range may be called: 60%, £6 3s. 9d.@£6 5s. per ton; 70%, £7 3s. 9d.@£7 5s. per ton, net cash; 74%, £8 2s. 6d.@£8 5s. per ton; 76%, £8 15s.@£9 5s. per ton, net cash.

Bleaching powder is quoted at from £6 15s.@£7 per ton, net cash, for hardwood packages, as to destination, but not much going on.

Bicarb. soda is unchanged, at £6 15s. per ton, less 2½% for the finest quality in 1-cwt. kegs, with usual allowances for larger packages.

Chlorate of potash is inactive, at 3⅞d.@4d. per lb.

Sulphate of ammonia has taken an upward turn, and with an improved demand, £8 2s. 6d.@£8 5s. per ton less 2½% is now quoted for good gray, 24% and 25% in double bags f. o. b. here, according to quality.

Nitrate of soda is firm, at £8 7s. 6d.@£8 10s. per ton, less 2½% for double bags f. o. b. here, as to quality.

Carb. ammonia, lump, 3d. per lb.; powdered, 3¼d. per lb., less 2½%.

MINING STOCKS.

Complete quotations will be found on pages 250 and 251 of mining stocks listed and dealt in at:

New York.	Colorado Springs.	Paris, France.
Boston.	Duluth, Minn.	Mexico.
Philadelphia.	Helena, Mont.	Shanghai, China.
Baltimore.	Salt Lake, Utah.	Valparaiso, Chile.
Pittsburg.	San Francisco.	London, England.
Cleveland.	Denver, Colo.	British Columbia.

New York, Friday Evening, March 5.

The market this week has been rather quiet, and prices, with few exceptions, show declines. What little business has been done fell to the Colorado stocks, the Comstock group being represented by only five stocks, while the Californias showed dealings in only two stocks.

The brokers on the New York Mining Exchange are in a dilemma. Those who are desirous of doing a legitimate business are apparently receiving no support from their Western colleagues. Besides the greater number of Colorado stocks, especially the Cripple Creeks, which are offered in this city, have no transfer offices here. In order that a broker may fill his orders in New York, he is obliged to send to Denver or Colorado Springs for the stocks, and in doing so must pay a transfer fee of 10c. per 100 shares in addition to the cost of the stock and the commission asked by the brokers there. Another 25c. is required for expressage of the stock to New York, and when it is received here and the expenditures made to secure it are counted up, the broker finds a very small margin left for himself after making the sale. Now many of the Cripple Creek stocks are overrated as regards capitalization, and this, coupled with the fact that they have no transfer offices in New York, makes it exceedingly hard for a broker to interest the public in these shares. In order that both the mining company and the mining broker may carry on a legitimate business in the stock market, the establishment of a transfer office in New York is necessary, and it would be most advantageous to all concerned.

The Victor Gold Mining Company held a special meeting on March 1st, when Mr. W. E. Johnson resigned as president, and was succeeded by Mr. W. H. Brevoort, whose office is in New York. The 47th dividend, amounting to $20,000, has been declared, and becomes payable on March 15th.

Boston. Mar. 4.

(From our Special Correspondent.)

Another week of booming copper stock, but it is a noticeable feature that speculation is mainly the element of the movement, for copper itself has scarcely risen since the advance commenced some weeks ago. We have wild rumors of syndicates buying up the stock of this and that large property, and even Calumet & Hecla is included.

Arnold heads the list in name, but does not command much attention. Atlantic holds steady around $23, with little doing. Calumet & Hecla, which reached its highest record of $390 per share on Monday, showing a further advance of $20 per share, has since dropped back to $375. Centennial made a sharp advance from $6½ to $9¼.

Franklin is very quiet, at a decline from $11⅛ to $11, awaiting results at the Franklin Junior. Kearsarge has weakened from $19½ to $18¾ in sympathy with the tone of the market. Osceola was strong early in the week and advanced from $32½ to $35¼ on talk of $5 in dividends this year. Quincy has declined from $116 to $112, on the "semi-official" announcement that no more extra dividends may be looked for. The scrip sells at $105½ and adding the $6¼ due April 16th would bring it close to the stock. Tamarack advanced from $119 to $123 on very good buying, but since declined two points. Tamarack, Jr., is off $¾ at $17¼. Tecumseh $¼ higher at $3. Wolverine gained from $9½ to $10½, but later lost the advance.

Anaconda, of Montana, has appeared this week at $33@$31 per share. Boston & Montana moved up from $115¾ to $124¾ (highest record), and since off to $119½, closing $120⅝. Butte & Boston went from $14½ to $17½ and off to $16⅝. Old Dominion rallied from the break of last week to $17⅜ and back to $16½, with smaller transactions.

Gold stocks continue rather quiet. Gold Coin plays between $3½ and $3¾ and seems to be neglected. Merced declined from $10½ to $9⅝. Pioneer, which has been very dull of late, took a start from $5¼ to $6⅛ and closes $6. Santa Ysabel rallied from $13½ to $14, and later off $¼ and very quiet.

This afternoon there was a further concession in prices and the selling orders appeared to be as two to one. Holders are evidently realizing.

Cleveland. March 3.

(From Our Special Correspondent.)

The delay on the part of the Western Ore men's Association in fixing the prices for the year has had a bad effect on the mining stock market. During the past week Republic, Cleveland-Cliffs, Jackson and Aurora suffered somewhat, and Minnesota was not listed. To counterbalance this in a measure, Lake Superior and Chandler advanced slightly. The transactions were few.

Salt Lake City. Feb. 27.

(Special Report of James A. Pollock.)

The mining stock market overreached itself last week, and in consequence there has been a marked decline. The desire to accept profits on the heavy advance seemed universal, and supporting orders were not sufficiently numerous to maintain the prices. Ajax noted practically no improvement, although offerings of the stock were not so heavy. Anchor and Alliance were again featureless, with the former somewhat weaker. Buckeye was lower on increased offerings, while Bogan did absolutely nothing. Centennial-Eureka was again offered in limited amount, but comparatively no dealing occurred. Daly pays its dividend on the 1st. Only limited dealing occurred in the stock, but the offerings were light. Daly-West was stronger than before the annual meeting. Dalton was slightly stronger on increased business. Dalton & Lark did nothing. East Golden Gate and Eagle were both featureless. Only little inquiry for Four Aces was noted. Galena is making a good shipping record, but the stock remains stationary. Geyser-Marion was in good demand, and sold at last week's figures. Horn Silver was offered with somewhat greater freedom, but business was light. Discounting the action of Captain De Lamar in connection with his option on the Mercur stock, the security was subjected to a persistent bear raid and declined to a lower point than it has touched for some months. Previous to the giving of the option, the stock was selling readily in the neighborhood of the option price. Mr. De Lamar's option is off and the company has $25,000 forfeit money in its treasury. The stock weakened materially, due to the fright that always comes to weak holders.

Mammoth fell somewhat under a bear movement, but stop orders were numerous and the close was not very materially lower. Northern Light was slightly lower. Ontario has declared its regular dividend, payable on March 1st. Little of the stock is now being offered on this market. Rover did comparatively little business, while Richmond-Anaconda was stationary. Sunbeam has a lively fight on and the stock showed weakness. Good demand and limited offerings held Silver King up to old prices. Both the Swanseas were almost stationary, although South Swansea went off slightly. Sacramento is doing little. No particular change occurred in Sunshine. Tetro is looking very promising. No change occurred in Utah.

San Francisco. Feb. 27.

(From Our Special Correspondent.)

The market opened this week with some show of activity and business, but it did not last and matters soon subsided into dullness, with a gradual weakening of prices. Later in the week there was a little spurt in the Gold Hill stocks, which carried their prices up. The business has been generally on a small scale, however.

We hear nothing new of the Consolidated California & Virginia developments, and the doubters are beginning to come forward again.

Some quotations are: Consolidated California & Virginia, $1.95@$2; Confidence, $1@$1.05 Chollar, 94@95c.; Ophir, 78@81c.; Hale & Norcross, $1.05@$1.10; Best & Belcher, 82@83c.; Challenge, 44@45c. Some sales of Standard Consolidated are noted at $1.60@$1.65.

The Merrimac Mining Company, of Grass Valley, California, has declared a dividend of 10c. per share, which will require $9,400.

Two Comstock companies, the Hale & Norcross and the Potosi, will hold their annual meetings on March 10th.

The Gold Valley Mining Company, of Sierra County, has levied an assessment of 10c. per share, delinquent March 24th.

According to the *Record* of this city, the project to drain and develop the mines of American Flat, which district is adjacent to the Comstock, is assuming shape to the extent of the organization of a company which will have charge of the work. The articles of incorporation have been signed. The trustees of the new company will be H. M. Yerington, W. E Sharon, H. M. Gorham, J. W. Eckley, Albert Lackey, J. R. Ryan and E. D. Boyle. Excepting H. M. Yerington and J. W. Eckley, who represent the Virginia & Truckee Railroad, the other trustees are superintendents, chiefly of the Gold Hill mines, and all of them are acting for capitalists. These trustees will serve for the first six months. The incorporation will be under the laws of Nevada, and the company will have about 14,000 ft. of ground.

Spokane, Wash. Feb. 27.

(From Our Special Correspondent.)

Trading at the different calls on the Stock Exchange this week was less active, and prices ruled slightly lower. The Exchange held a special meeting on February 23d, at which it was decided to rent new offices. Space in the new quarters were put up at auction; vice-president C. F. Clough bid $100 per month for the Riverside office, which he secured, and after several low bids were made for the Mill street office, a Mr. Rutter secured it at $52.50 per month. The alien labor bill, containing the Corliss amendment prohibiting Canadians from enjoying their present privileges in this country, was then discussed and opposed, and a telegram to that effect sent to several United States Senators.

Selling of mining stock to Ontario parties was fairly large this week. Among the stocks were 1,000 shares of Orphan Boy at 6c., 4,000 shares of St. Elmo at 9c, and 2,200 shares of Noble Five at 59c.

On February 26th President Newbery called up many stocks, which at the close showed heavy dealings. Iron Mask recorded transactions of a few thousand shares at 35@37½c. Last week th

stock was offered at 46¼c. to 48c., while on Thursday of this week it rose to 50c.

Silverine is selling in the largest quantities at a time, and on February 24th sales of 20,000 shares were recorded at 7¼c. Cariboo, which sells for 47½@48½c., was dealt in to the extent of 1,500 shares at these prices. The cheaper stocks, such as Butte, Poorman and a few others, held their own as regards sales. It is anticipated that the number of unlisted stocks called will be materially increased within a short time. The weekly sales of all stocks dealt in were as follows: Tuesday, February 23d, 18,200 shares; Wednesday, 20,500 shares; Thursday, 16,000 shares; Friday, 7,800 shares, and Saturday, February 27th, 5,250 shares.

British Columbia.

(From Our Special Correspondent.)

ROSSLAND, Feb. 25.

The near approach of spring is beginning to have its effects on the camp. There is a marked tendency for the quotations of the stocks belonging to many of the companies to advance. Most of the promised strikes have failed to become realities, and it must be reported to the credit of those who have been booming the camp that there has, of late, been a wholesome decline of this questionable method of helping the mineral industry along. There has been a loud demand for capital here—English money, but most of the conditions in the camp have not yet come up to the requirements of those who command that capital.

It is probable that the opening up of much new country will keep up the fever of prospecting to the highest pitch of excitement; and one of the signs of the times is a tendency on the part of English capitalists to improve the methods by dealing directly with the prospector, a course to which it may be said he has been driven.

London. Feb. 13.

(From Our Special Correspondent.)

There has been an entire absence of business in the mining stock market. In the South African section there has been some selling, and quotations have weakened a little. The fortnightly settlement, which occurred this week, was quickly arranged, thus indicating the very small amount of business that is transacted nowadays. The making-up prices showed a distinct fall as compared with those ruling at the previous settlement. Some rumors have been sent round with regard to the indemnity demanded by the Transvaal for the Jameson raid, but nobody took any notice of them. Rumors were also revived that Lord Rothschild had decided to go on the board of directors of the Chartered Company, but this was also unsubstantiated.

The Rand yield for January was on the whole greater than was expected, 209,832 oz., a figure which has only once been surpassed. The Robinson yield was 4,000 oz. less than in the previous month, and some of the others showed decreases, but the bulk of the mines showed increases.

The West Australian and New Zealand sections have been dull and Indiana also has been quiet, without any feature of note. Americans and British Columbians are still in the background.

The report of the Twin Lake Placers, Limited (Colorado), for the year 1896, shows that a profit of £3,147 has been made during the year. The amount of earth washed was 667,000 cu. yds., yielding £12,400, an average yield of 9c. per cu. yd. The yield has increased considerably as compared with last year, when a good deal of comparatively barren ground had to be cleared away.

The Playa de Oro Company, operating in Ecuador, recently elected a new board of directors. Two Englishmen, Mr. Coats, of Paisley, and Sir Charles Hunter, have joined the board, and are devoting considerable attention to the company's property. A meeting of English shareholders was held the other day to hear the reports of Sir C. Hunter and Mr. Stapleton, a New York director, who is now in London. A very fair and complete statement was given by these gentlemen of the state of the property, a pleasing contrast to the reports circulated by the previous controllers.

The Palmarejo Company (Mexico) has been much in evidence during the past week. The directors and shareholders have at last come to the conclusion that Captain Drake was not looking after their interests properly at the mine. They stated that he had not taken any notice of economies proposed, and even went so far as to allege that a large amount of bullion was missing. One of the directors, Mr. Applegarth, the original promoter, supported his friend, Captain Drake, and a public meeting had to be called in order to remove Mr. Applegarth from the board, in addition to removing Captain Drake from the management. No doubt, this revolution is a wise one, but a more important question exists—whether the mine will pay, any way, even under the most capable and most honest of managers.

A company has been formed during the week to work a California property. Its name is the West Corporation, Limited; capital, £100,000. The properties are in Mariposa County, and are named the Penon Blanco mine, the North Penon Blanco, the Old Judge, the South Judge, the Penon Blanco placer claim and the White Oak, together with mill site, timber land and river land. Details are not forthcoming as yet with regard to the nature of the minerals found there, but the company will be floated shortly, and then reports will be given. The promoters are Messrs. Saunders, Fielding, Carlton, Vivian Bond and Edwards, of London and New York, some of whom were connected with the introduction of the Mountain copper mines of California.

Another company to work in America formed this week is the Gold Reefs of Georgia, Limited. This has been formed to take over the properties of the St. George Gold Mining Company, Limited, which was not a success, though reconstructed twice. The properties are the Dean mines in White County, Ga., on the Chattahoochee River. Very little information is obtainable as to the value of the mines, so American readers would confer a benefit by sending you information. The chief man interested is Mr. Edwin Bowley, who is offering extrordinarily liberal bonuses to anyone hardy enough to put up a little money. He is making the mistake of calling everybody he sends a circular to "his friend," saying he considers this a splendid opportunity for a first-class investment, that he does not wish "his friends" to be left out. Consequently he gets a good deal of chaff both privately and from the financial press.

[Any of our readers who may have knowledge, or can put us in the way of securing reliable information concerning the intrinsic value of any properties mentioned in our London letters will greatly oblige by writing us.—ED. E. & M. J.]

Paris. Feb. 21.

(From Our Special Correspondent.)

The Bourse generally is still in a much disturbed condition, owing to the troubles in the East. In consequence the mining stock market has been neglected, and quotations have been falling on almost all the classes of mining shares.

The metallurgical shares have felt these difficulties more than any others, perhaps because they have been very high, and quotations are lower for all of them. The coal stocks have also shown some reaction, though the increasing production shown is in their favor, especially as it is all absorbed by the demand.

The copper stocks continue strong and have felt the general decline less than any other. Boleo has reached a higher point than ever before. The zinc shares are rather weak and there is talk of overproduction and low prices. Nickel is a little higher again.

Huanchaca silver is depressed on reports of fresh trouble from water in the mines. There has been a remarkable rise in St. Elie, a Guiana gold stock.

The market for the Transvaal gold stocks continues extremely dull, and every slight improvement brings out so much stock that it is sure to be followed by a fall. Our people have lost all their faith in these stocks, and most holders seem to be only waiting for an opportunity to unload and get rid of their holdings.

Our papers are advertising for sale stock of the Globe Hill Consolidated Gold Mining Company of Cripple Creek. The total capital stock, according to the notices, is 1,500,000 shares of 5 fr. each, and the company is now offering 500,000 shares for sale at 2 fr. each.

The foreign trade of France for the month of January, is reported by the Ministry of Commerce as follows:

	1896. Francs.	1897. Francs.
IMPORTS:		
Food	91,935,000	70,435 000
Raw materials	190,271.000	231,453,000
Manufactures	44,153,000	42,527,000
Total	326,359,000	341,415,000
EXPORTS:		
Food	41,541,000	38,494,000
Raw materials	63,913,000	60,927,000
Manufactures	143,387,000	130,738,000
Postal parcels	10,706,000	14,051,000
Total	259,547,000	244,210 000
Excess, imports	66,812,000	100,205,000

There is beginning to be a good deal of talk about possible mining developments in Madagascar. The great island is believed to possess gold deposits of value, and I hear of arrangements for the formation of at least one syndicate to conduct explorations. The French administration of the island has adopted regulations for prospecting and for granting mining concessions. It appears also that the natives find and sell so much gold that it has been found necessary to regulate the traffic.

Who knows? We may have a new Transvaal of our own, wholly under French control. AZOTE.

[We regret that in the haste of going to press last week a paragraph in the letter of our Paris correspondent reflecting on the German people was permitted to pass the editorial scrutiny. "Azote," like many of his countrymen, evidently has no friendly feeling for his German neighbors; but the *Journal* has much regard for both nations, has nothing to do with politics, and must apologize for having suffered such a paragraph to appear in its columns. We believe that our correspondent himself will in time see his mistake, and come to recognize the good qualities of his old-time enemies. —ED. E. & M. J.]

MEETINGS.

Cheyenne Home Mining Company, annual meeting at Colorado Springs, Colo., on March 22d, at 8 p. m.

Golden Treasure Gold Mining Company, annual meeting, in rooms 77 and 78 Commercial Block, Salt Lake City, Utah, on March 31st at 10 a. m.

Pennsylvania Steel Company, annual meeting at 312 Girard Building, Philadelphia, Pa., on March 9th, at 2 p. m.

Silver Reef Mining Company, in Merchants' National Bank Building, in Deadwood, S. Dak., on March 18th, at 2 p. m.

MISCELLANEOUS DIVIDENDS.

The Virginia-Carolina Chemical Company, of Richmond, Va., has declared a dividend of 1% on its common stock.

ASSESSMENTS.

Name of Co.	Loc'n.	No.	Dinq.		Sale.		Am
American Quartz	Cal	1	Mar.	22	Apr.	12	.01
Andes Silver	Nev.	43	"	8	Mar.	31	.10
Banner	Idaho.		"	19	"	29	.01
Best & Belcher	Nev.	61	"	2	"	23	.25
Bogan Silver	Utah.	4	Feb.	18	"	8	.05
Bullion	Nev.	49	"	18	"	11	.10
Central Eureka	Cal.	4	"	27	Mar.	23	.03
Central G. & S.	"	8	Mar.	2	"	23	.02½
Channel Bend	"	6	"	12	Apr.	3	.02
Confidence	"	1	Feb.	27	Mar.	20	.10
Con. Imperial	Nev.	38	Mar.	23	Apr.	13	.01
Eureka Con.	Cal.	7	Feb.	26	Mar.	20	.05
Eureka Con.	Nev.	14	"	23	"	15	.25
*Fish Springs	Utah.		Mar.	27	"	24	.04
Golden Fleece	Cal.	19	"	30	"	24	2.00
*Gold Valley	"	5	"	24	"	8	.10
*Jamison	"	9	Feb	24	Apr.	21	.05
Jones	Utah.		"	16	Mar.	11	.00¾
Julia Con.	Nev.	28	"	26	"	19	.05
Jupiter Gravel	Cal.	1	Mar.	3	"	23	1.00
Kentucky Con.	Nev.	13	"	23	Apr.	14	.05
Larkin	Cal.		Feb.	15	Mar.	15	.05
Little Pittsburg	Utah.	12	Mar.	17	Apr.	5	.01½
*Live Oak & Minuett	Cal.	12	"	17	"	5	.01½
Lone Hill	"		"	20	"	15	.01½
Lucky Bill	Utah.		Feb.	23	Mar.	13	.01½
*Marguerite	Cal.	5	"	25	Apr.	8	.10
*Mineral Hill	"	1	Mar.	15	"	13	.05
Occidental Con.	Nev.	26	"	16	"	6	.10
Ophir Silver	"	70	"	10	Mar.	30	.25
Rescue Gold	"						.10
Reward Gold	Cal.	18	Mar.	11	Mar.	27	.02
Silver King	Ariz.	16	"	1	"	29	.25
Soulsby Con. G.	Cal.	6	"	6	"	23	.05
Sunbeam Con.	Utah.	8	"	10	"	27	.01
*Thorpe	Cal.	5	Feb.	23	"	15	.05
Troy	Alaska	3	Mar.	9	"	26	.10
Vanderbilt	Idaho.		"	5	"	21	.05
Ybarra Gold	Mex.	7	"	22	Apr.	8	.05

*New assessment.

DIVIDENDS.

NAME OF COMPANY.	Current Dividends. Date.	Am't.	Paid since Jan. 1, 1897.	Total to date.
Aetna Con. Q	Mar. 20	$10,000	$50,000	$90,000
Alaska-Mexican			18,000	191,031
Alaska-Treadwell			75,000	3,100,000
*Anchoria-Leland			12.000	42,000
Arizona Copper			48,000	
*Atlantic Copper			40,000	740,000
*Bald Butte			5,000	475,000
*Boston & Montana			450,000	5,375,000
*Bullion Beck			120,000	2,067,000
*Calumet & Hecla			1,500,000	48,350,000
Cariboo	Mar. 4	16,000	16,000	140,965
*Centennial Eureka			60 000	1,920,000
*Charleston			10,000	150,000
Coronas			3,000	8,000
Daly	Mar. 1	37,500	37,500	2,925,000
Della S.			10,000	60,000
*Elkton Con.			45,000	211,960
*Florence			7,212	121,712
Galena			5,000	71,000
*Garfield-Grouse			12,000	24,000
*Gold Coin			15,000	120,000
*Golden Fleece			6,000	569,179
*Hecla Con.			30,000	2,175,000
*Highland			20,000	3,244,918
*Homestake			62,500	6,150,000
Hope	Mar. 1	10,000	20,000	672,252
*Idaho			40,000	132,000
*Iowa Gold			5,000	65,000
Last Chance			20,000	40,000
*Le Roi			75,000	325,000
*Mercur			50,000	625,000
Mont. Ore Pur. Co.			40,000	520,000
*Morning Star			24,000	474,000
Napa Con			10,000	820,000
*N. Y. & Honduras Rosario	Mar. 15	15,000	45,000	720,000
Ontario	" 1	15,000	30,000	13,385,000
*Osceola			50,000	2,122,500
*Portland			60,000	923,000
*Quincy			400,000	9,070,000
*Reco			100,000	137,500
*Sacramento			10,000	17,000
*Silver King			75,000	937,500
*South Swansea			15,000	22,490
Swansea			5,000	28,500
*Utah			2,000	175,000
*Victor			40,000	745,000
Totals		$103,500	$3,773,212	$109,276,477

* February dividend paid.

NOTE.—This table does not give all the dividends paid by mining companies, as it is impossible to obtain a complete list of dividends declared. Many companies are close corporations and refuse to give the information. Readers of the *Engineering and Mining Journal* will confer a favor on the publishers if they will notify the *Journal* of any errors or omissions in the above table.

STOCK QUOTATIONS.

NEW YORK.*

Name of Company.	Location.	Par val.	Feb. 27. H.	Feb. 27. L.	Mar. 1. H.	Mar. 1. L.	Mar. 2 H.	Mar. 2 L.	Mar. 3. H.	Mar. 3. L.	Mar. 4 H.	Mar. 4 L.	Mar. 5. H.	Mar. 5. L.	Sales
Alamo	Colo.	1									.06				1,000
Anaconda	"	1	.60	.55			.54	.53	.55	.54	.54	.53¾	.54		2,100
Anchoria-Lel'd.	"	1									1.10				100
Annetta	"	1			.17½	.17	.17½		.18	.17½	17½		.17½		1,600
Arg'ntum-Jun.	"	5	.35	.33	.30		.33		.29	.28	.31	.30	.30		2,700
Belcher	Nev.	100													
Best & Belcher	"	10									70				200
Bodie	Cal.	100													
Breece	Colo.	25													
Brunswick	"	1	.15		.15	.14	.14				.14		.13		3,600
Chrysolite	"	50													
Comst.T Bonds	Nev.	100									.05				2,000
Con. Cal. & Va.	"	100													
Con. Imperial	"	100													
Creede & C. C.	Colo.	1	.15				.06						.05¾	.05¼	3,300
Cripple Cr. Con.	"	1	.10		.11		.11		.12		.11	.10¼	.10		15,600
Crescent	Utah.	25													
Cresus	Colo.	1													
Crown Point	Nev.	100													
Dalton & Lark	Utah.	1													
Deadwood	S. Dak	25													
Eagle	Colo.	5							.25						1,000
Elkton	"	1	1.30	1.28	1.32				1 34						9.0
Fanny B	"	1	.08						.08		.08		.07½	.07	5,100
Favorite	"	1	.06						.07						3,000
Garfield Grouse	"	1							.05¾		.06	.05¾	.06½		4,000
Geyser	Utah.	5													
Gold Cliff	Colo.	1													
Gold Coin	"	5					3.38								150
Gold Explor.	"	1							.11½		.10				1,60
Gold & Globe	"	1									.10½				500
Gold n Fleece	"	1	.35				.36		.36	.33½	.38	.37	.37		1,500
Gold San Juan	"	1	.16¼	.16½	.16¾	.16	.16¼		.17	.16¾	.18	.17¼	.18½	.17½	17,100
Hale & Norcross	Nev.	100	1.00												200
Homestake	S. Dak	100													
Horn Silver	Utah.	25													
Iron Silver	Colo.	20							.40						300
Isabella	"	1	.46				.49		.49						600
Jack Pot	"	1									.07½	.07	.07		1,8.0
Japan	"	10													
Jefferson	"	1							.13		.14½	.13½	.14		1,500
King & Pemb.	Ont.	10													
Lacrosse	Colo.	10													
Leadville Con.	"	10													
Little Chief	"	50													
Mercur	Utah.	25													
Mexican	Nev.	100									.32				2,000
Mollie Gibson	Colo	5	.32½				.33				.33	.32½	.32		1,400
Mono	Cal	100													
Moul on	Mont.	5													
Mt. Rosa	Colo.	1							1.						300
New Haven	"	1											.02½		5,0.0
Old Dominion	Ariz.	25					17.75								50
Ontario	Utah.	100													
Ophir	Nev	100	.80		.85								.80		500
People's	Colo	1													
Pharmacist	"	1	.14		.14		.14	.12					.14		2,000
Phoenix Con	Ariz	100			.04										400
Portland	Colo.	1													
Potosi	Nev.	100													
Quicksilver	Cal	100													
" pref.	"	100													
Red Bird	Colo.	1											.08		100
Red Mountain	"	5	.26¼		.26¼	.26	.28	.27½	.27½	.27	.28		.27½		7,000
Russell	N. C.	1	.28	.27	.28½	.27½	.29½		.29½		.30	.29	.31	.29½	19,2 0
Savage	Nev	100					.33				.33				500
Sierra Nevada	"	100	.35						.30						1,000
Sm. Hopes Con.	Colo.	20													
Specimen	"	1					.05½				.07½		.06½		1,000
Standard Con.	Cal.	100									1.70		1.70		400
Syndicate	"	100					.14								600
Union	Colo.	1					.23				.28½		.21½	.21	1,800
Union Con	Nev.	100								.30					200
Utah Con	"	100													
Victor	Colo.	5													
Work	"	1					.03½				.07½		.07½	.06¾	2,700
Yellow Jacket	Nev.	100													

*Official quotations. Sales, Consolidated and New York Stock Exchanges, 17,000 shares; New York Mining Exchange, 100,100 shares; total, 117,100 shares.

INDUSTRIAL, COAL AND COAL RAILROAD.*

Name of Company.	Par value.	Feb. 27. H.	Feb. 27. L.	Mar. 1. H.	Mar. 1. L.	Mar. 2. H.	Mar. 2. L.	Mar. 3. H.	Mar. 3. L.	Mar. 4 H.	Mar. 4 L.	Mar 5. H.	Mar 5. L.	Sales
Balt. & Ohio	100					15¾	15¼	16	15¾	16¼	16			1.310
Ches. & Ohio	100	17½		17¾	17¼	17¾		18	17¾	17¾	17¾	17¾	17¾	6,557
Col.C. & I.Dev	100													
Col. Fuel & I.	100			22¾	22					23		21¾		350
Col.,H.V.&Tol	100	4¼		4¼	4	4		4¼	4¼	4¾	4¼			3,085
do. pref.	100													
Col. & H.Coal	100													
Del. & Hud. C	100	107¼	107⅛	107¾	107	107¾	107	108¾	107¾	108¾	108	108¼	108	4,734
Del., L. & W.	50	154¾	154	154	152¾					154		154	153¾	2,080
General Elec.	100	35⅝	34⅛	35		34⅝	34⅜	35¼	35	35¼	34⅝	36¾		15,729
Lake Erie&W	100	16⅜						17		17⅜	17½			500
do. pref.	100													
Morris&Essex	100			165										20
Nat'l Lead	100	23¾		24⅜	24¼	25	24½	24¾				24¼		1,525
do. pref.	100	9 ⅜		9			9.9⅝		9⅞			91		673
N. J. Central	100	97½	96¾	94⅛	93¾	95¼	93¾	96	95¾	95¾	94¼	95¼	94¾	32,940
N. Y.,L.E.&W	100													
do. pref.	100													
N.Y.,Ont.&W.	100					14⅝	14⅜	15¼	14⅜	15¾	14⅜	14⅝	14¼	5,940
N.Y.,Susq.&W	100							9		9				150
do. pref.	100			25				25¾	25¼					1,0.0
Norfolk & W.	50			16										13
do. pref.	50							28¾	28¼	29¼				461
Phila. & Read.	50	24¾	24½	25¼	24¾	24¾	24¼	25¾	24¾	25¼	24¾	25¼	24¾	21,138
Tenn. C. & I.	100			28⅝	27¾	28¾	28	29	28¾	29¼	27¾	28¼	27¾	14,565
do. pref.	100													
Wheel. & L. E	100			1¾		1¾	1¾	1¾	1¾	1¾		2	1¾	1,933
do. pref.	100							6	5¾	6¾				650

* Official quotations N. Y. Stock Exchange. Total shares sold, 115,530.

SAN FRANCISCO, CAL.*

Name of Company.	Location.	Par. value.	Feb. 26.	Feb. 27.	Mar. 1.	Mar. 2.	Mar. 3	Mar. 4
Alta	Nev.	100			.15	.04	.04	.04
Belcher	"	100	.24	.23	.20	.19	.20	.18
Belle Isle	"	100						
Best & Belcher	"	100	.80	.77	.77	.72	.73	.70
Choliar	"	100	.96	.99	.95	.86	.94	.91
Con. California & Virginia	"	100	1.95	1 85	1.90	1.60	1.65	1.50
Crown Point	"	100	.22	.20	.20	.18	.20	.19
Gould & Curry	"	100	.40	.38	.37	.32	.33	.31
Hale & Norcross	"	100	1.05	1.05	1.00	.96	.95	.87
Mexican	"	100	.35	.34	.35	.29	.28	.26
Ophir	Nev.	100	.79	.77	.77	.72	.73	.71
Potosi	"	100	.44	.40	.40	.35	.36	.34
Savage	"	100	.37	.37	.35	.31	.32	.30
Sierra Nevada	"	100	.34	.34	.33	.37	.28	.28
Standard	Cal.	100	1.65	1.65	1.70	1.60	1.70	1.60
Union Con.	Nev.	100	.36	.36	.30	.31	.32	.29
Utah	"	100		.05	.07		.07	.08
Yellow Jacket	"	100	.28	.27	.24	.27	.28	.25

*Official telegraphic quotations, San Francisco Stock Exchange.

BALTIMORE, MD.* Week ending Mar. 4.

Name of Company.	Location.	Par value	Bid.	Ask.	Name of Company.	Location.	Par value.	Bid.	Ask.
Balt. M. & S.	N. C.	5			Howard C.&C	Md.	5		
Conrad Hill	"	10			Lake Chrome	"	5		
Con. Coal	Md.	100	36	39¼	Ore Knob	"	10		
G. Cr'k Coal	"	100	105	107¾	Silver Valley	N. C.	5		

BOSTON, MASS.*

Name of Company.	Location.	Par val.	Feb 26. H.	Feb 26. L.	Feb. 27. H.	Feb. 27. L.	Mar. 1. H.	Mar. 1. L.	Mar. 2. H.	Mar. 2. L.	Mar 3 H.	Mar 3 L.	Mar. 4. H.	Mar. 4. L.	Sales.
Allouez	Mich.	25													
Anaconda	Colo.	1					33.00	31.00	31 00						200
Arnold	Mich.	25	3 25	3 00			3 00		3.25	3.00	3.18	3 00	3.25	3 13	2,975
Atlantic	"	25	23.00				24.00	23.75					23 0.		65
Bonanza	Nev.	10	.50		.50		.50		.50		.50		.50		2,450
Bost. & C. C	Colo.	1					15								500
Bost. & Mont.	Mont.	25	117⅜	114¾	119¾	117½	121¾	120	124¼	120	123¾	119½	122¼	12¾	26,306
Butte & Bost	"	25	15 00	14 75	16 25	14.88	17.25	16 00	17.50	16 75	17 .5	16.50	17.38	16 50	83,010
Cal. & Hecla	Mich.	25	375	370			390	375	390	385	385		375	280	319
Centennial	"	25	6 50	6.25	6 63	6.25	7.00	6.25	8 25	7.25	8.88	7.88	9.25	8.50	20,490
Dominion Coal	N. S.	100	8 75		8 63						8.50				745
" pref.	"	100					85 00								6
Franklin	Mich.	25	12 00		11 50		11.50				11.50		11 0		2 5
Gold Coin	Colo.	1	3.63	3 50	3.50		3 50		3.75	3 63	3 75	3.50	3.63		5,495
Humboldt	"	1											45		2 0
Illinois Steel	Ill.	100	35 50	35 00	36 00				37 25	37 00			37 50	36.50	320
Kearsarge	Mich.	25	18 75	18.25	19.25	19.00	19.50	19.25	19.50	19.00	19.75	19.25	19 38	18 88	2,198
Lake Sup. Iron	"	25													
Merced	Cal.	15	10.25	9 75	10.13	10.00	10.50	10.00	10.75	9.13	9.88		10.00	9.38	4,755
Minnesota (Ir.)	Minn.	100													
Napa	Cal.	7							6 75						100
Old Dominion	Ariz	2	16 50	16.0	16.88	16 50	17.25	16.50	17 38	17 00	17.00	16 25	16.75	16.50	4,980
Osceola	Mich.	25	34.50	33 25	35.00	34 50	35.25	34.50	35.50	34.75	35.00	34.63	34.50	34.25	4 877
Pioneer	Cal.	10	6.00	5.50	6 00	5.75	6.13	6.00	6.00	5.75	6.13	5 88	6.00		5,107
Quincy	Mich.	25	116		116	115¾	115½		115	114			112	111¾	155
do. scrip	"		106		105				105¾		105¼				58
Santa Rosa	Cal.	10													
San. Ysabel (G.)	"	5	13.75	13 50	13 63	13.50	14.00	13.63	14 00	13 88	13 75	13.50			1,270
Tamarack	Mich	25	119½	1 9	120		121	120	123	122	122		123	121	59
Tamarack, Jr.	"	25	18 13	18.00	18.25	17.88					17 50		17.50	17.25	964
Tecumseh	"	25	2.75								2.75		3 00		355
Westingh.E.&M	Pa.	50			24.25		24.00				51 00				60
do. pref.	"	50	50.75		50 75	50.50			51 00		51.00		51 25		70
Wolverine	Mich.	25	10 25	10.00	10.13	0 00	10.38	10.25	10 50	10.00	10.50	10.13	10.50	9 88	4,212

*Official quotations Boston Stock Exchange. † Ex-dividend. Total sales, 172,814.

COLORADO SPRINGS, COLO.

Name of Company.	Par val	Feb 22.† H.	Feb 22.† L.	Feb. 23. H.	Feb. 23. L.	Feb. 24. H.	Feb. 24. L.	Feb. 25 H.	Feb. 25 L.	Feb. 26 H.	Feb. 26 L.	Feb. 27. H.	Feb. 27. L.	Sales.
Ajax	$1													
Alamo	1											4¾		500
Am'ric'n C	1													
Anaconda	5			.6 ¼	.59⅜	.61¾	60	.61½	.61	.61	.60	.59¼	.57½	38,100
Aola	1													
Arg'ntum J	2			.35		.35		.35	.34	.33		.29	.28	6,330
Bangkok	1													
Bankers	1													
Banner	1													
Ben Hur	1													
Blue Bell	1													
Bob Lee	1			.01		.009								3,000
Bost. & C.C.	1													
Bucknorn	1													
Colo.C.&M.	1													
Columbine	1													
Copper M	1													
Cr. & C. C.	1			.05¾		.05¼	.05¾							7,000
C. C. Con.	1			.10⅜	.10¼		.10¾	.10		.10¼	.10			9,000
Cr.Cr.Exp.	1													
Cresus	1													
Des Moines	1					.02¼								1,000
Elkton	1											1.34¼	1 34	800
Enterprise	1													
Fanny B.	1													
Favorite	1			.07						.06¼	.06¼			5,500
Franklin	1					.005								3,500
Garfield-G	1													
Gold. Age	1													
Gold. E'g'e	1													
Gold Fi'ce.	1					.46		.40		.36				700
Gold & Gl.	1			.10¾		.10								1,500
Gold King	1													
Gold Stand	1													
Gould	1													
Grotte	1													
Henrietta	1													
Humboldt	1													
Ida May	1													
Ingham,C.	⅛							.14				.13		1,500
Iron Clad	1													
Isabella	1			.48¼	.48	.48¼	.48¼	.48	.47¾	.47¼	.46¾	.48¼	.47¼	68,450
do.stamp.	1			.47	.46¾	.47¼				.46¾				3,250
Jack Pot	1			.07¾	.07¼	.07¾		.07¾	.07¼	.07		.07		30,500
Jefferson	1													
Keystone	1													
Ladessa	1													
L'nc'ln B'y	1													
LottieGib	1													
Marion	1									.005				5,000
Matoa	1							.08				.08¾	.08	4,000
Mollie G.	5			.37	.36	.36	.34	.33	.32	.32	.29¾			6,000
Monarch	1													
Mt. Rosa	1					.11	.10¾							2,0.0
Mutual	1													
Nugget	1													
Ophir	1													
Oriole	1					.02								1,000
Orphan B.	1													
Pappoose	1													
Pharmacist	1			.13¾	.13¼	.13¾	.13⅜	.13¾	.13½	.13¼	.13			32,000
Pilgrim C	1											.01		1,0.0
Portland	1			.95¼	.92½	.90	.80	.8	.75	.80	.72	.85	.82	7,700
Reno	1													
Sacrameto	1													
Silver St.	1													
Specimen	1													
Sq'w Mt.T	1													
Temonj	1													
Tsachyte	1			.02½	.02	.03½	.8¼			.01½	.01¼	.01⅜		9,600
Union	1			21½	.24			.23¾	.23	.23¾	.22¼	.22⅜	.22	18,900
Virginia M.	1													
Work	1							.08¾		.08¼		.08¼	.08	12,5.0

Official quotations. Total shares sold listed, 269,730; unlisted 640,7 0 † Holiday.

CLEVELAND.

Name of Company.	Par value.	Mar. 3. Bid.	Mar. 3. Ask.	Name of Company.	Par value.	Mar. 3. Bid.	Mar. 3. Ask.
Aurora	$25		$1	Lake Superior	$ 5		$32
Chandler	25	$37	40	Minnesota	100		
Cleveland-Cliffs Iron	100		50	Pittsburg & L'ke Angeline	25	$35	
Jackson	25		70	Republic	25	10	11

BRITISH COLUMBIA. Week ending Feb. 27.

Name.	Selling price.	Name	Selling price.	Name.	Selling price.
Bound'y Creek:		**Trail C'k** (con.):		**Trail C'k** (con.):	
Old Iron Sides	$0.09	Br Col. G. King	$0.10	Le Roi	$7.50
C'p McKenney:		t aled nia Con.	.10	Lily May	.20
Cariboo M.& S.Co.	.47	California	.15	Little Darling	.05
Ainsworth & Nelson Dis.:		Camp Bird	.05	Mabel	.05
		Colonna	.25	Mayflower	.14
Dellie M. & M. Co	.12	Commander	.15	Monita	.20
Colvile Res.:		Crown Point	50	M nte Cristo	.15
Burton	.03	Deer Park	.30	M rning Star	.07
Fiacility G & C.Co	.10	Dewdney	.06	Nest Egg	.09
Joe T. Gold M. Co	10	Enterprise	.20	Northern Bell	.15
Mountain View	.06	Evening Star	.14	O. K	.28
Idaho District:		Georgia	.15	Orphan Boy	.12
Daisy Group	.10	Gertrude	.10	Palo Alto	.09
Oro Pinar Placer	.12½	Good Hope	.04	Phoenix	.12
Slocan Dis.:		Great Western	.16	Poorman	.05
Idler	.10	Hattie Brown	.08	ted Eagle Lee	.10
Noble Five Con	.62	Helen	.05	Red Mt View	.12½
Slocan Star	2.50	High Ore	.06	tossland Red Mt	.24
Revelstoke:		Homestake	.12	St. Elmo	.09
Orphan Boy	.07	Imperial	.08	Silver Bell	.10
Trail Creek:		Iron Mask	42	Silverine	.10
Alberta	.10	Iron Coat	.12	So. Cross & Wolver. C.	.10
Big Chief	.10	Ivanhoe	.10	St Paul	.12½
Big Three	.15	Josie	.20	West Le Roi	.15
Blue Bird	.10	Jumbo	.04	White Bear	.15
Butte Gold-Copper	.07	Josie Mac	.10		

Par val.: Hall Mines and Le Roi, $5; Slocan Star, 50c.; other stocks, $1.

LONDON. Feb. 19.

NAME OF COMPANY.	Country.	Product.	Capital stock.	Par value.	Last dividend. Amt.	Last dividend. Date.	Quotations. Buyers	Quotations. Sellers.
				£ s. d.	s.d.		£ s. d.	£ s.d.
N'th Americans:								
Alaska-Mexican	Alaska	Gold	£200,000	1 0 0	0 4.8	Jan., 1897	1 11 3	1 13 9
Alaska-Treadwell	"	"	1,000,000	5 0 0	1 6	" "	4 17 6	5 2 6
De Lamar	Idaho	Gold & silver	400,000	1 0 0	1 0	Nov., 1896	6 6	7 6
Hall Mines	BritishCol	Cop. & Silver	250,000	1 0 0			1 8 9	1 11 3
Montana	Montana	Gold & silver	660,000	1 0 0	0 3	June, 1896	4 3	4 9
Palmarejo	Mexico	" "	800,000	1 0 0			1 3	1 9
Pinos Altos	"	" "	100,000	1 0 0			1 3	3 9
Plumas-Eureka	California	Gold	281,250	2 0 0	0 6	Oct., 1896	2 6	5 0
Richmond	Nevada	G'ld, sil., le'd	270,000	5 0 0	1 0	Dec., "	10 0	15 0
Sierra Buttes	California	Gold	245,000	2 0 0	0 6	Apr., "	2 6	5 0
Springdale	Colorado	"	360,000	4 0	0 2	Sept., 1894	1½	4½
S'th Americans:								
Colomb. Hydra'lic	Colombia	Gold	75,000	1 0 0	1 0	July, 1895	5 0	7 6
Frontino & Bolivia	"	"	140,000	1 0 0	1 3	Dec., 1896	1 7 6	1 12 6
St. John del Rey	Brazil	"	562,000	1 0 0	xn	Jan., 1895	15 0	17 6
Copper:								
Anaconda	Montana	Cop. & Sil.	6,000,000	5 0 0	5 1¾	Nov., 1896	6 3 9	6 6 3
Cape Copper	So. Africa	Copper	400,000	2 0 0	3 0	Dec. "	2 7 6	2 12 6
Copiapo	Chile	"	200,000	2 0 0	1 6	" "	2 2 6	2 7 6
Mason & Barry	Portugal	Cop. & sulph	1,050,000	4 0 0	£1 cp	Dec. "	2 10 0	2 15 0
Rio Tinto	Spain	Copper	3,250,000	10 0 0	18 0	Nov., "	26 17 6	27 2 6
Tharsis	"	Sulpr & cop'r	1,250,000	2 0 0	4 0	April, "	6 10 0	6 15 0
Australians:								
Bayley's Reward	W. Au't'lia	Gold	480,000	1 0 0	0 4	Dec., 1894	2 9	3 3
†Broken Hill Prop.	N.S. Wales	Silver	960,000	1 0 0	1 0	" 1896	2 12 6	2 15 0
‡Mt. Morgan Gold	Qu'ns'land	Gold	1,000,000	1 0 0	0 6	Feb., 1897	3 10 0	3 15 0
South Africans:								
British S. Africa Co	So. Africa	Lands & Ex.	2,500,000	1 0 0	xn.	Jan., 1897	2 3 9	2 6 3
City & Suburban	Transvaal	Gold	85,000	4 0 0	2 0	" "	3 13 9	3 16 3
Crown Reef	"	"	180,000	1 0 0	12 0	Oct., 1896	9 17 6	10 2 6
De Beers	CapeCol'y	Diamonds	3,950,000	5 0 0	£1	Jan., 1897	27 13 9	27 16 3
Ferreira	Transvaal	Gold	90,000	1 0 0	30 0	" "	16 5 0	16 15 0
Geldenhuis Est	"	"	300,000	1 0 0	2 6	Oct., 1896	2 10 0	2 15 0
Henry Nourse	Witw'sr'd	"	125,000	1 0 0	6 0	Jan., 1897	5 7 6	5 12 6
Heriots (New)	"	"	115,000	1 0 0	4 0	" "	6 17 6	7 2 6
Jagersfontein	Orange F.S	Diamonds	1,000,000	5 0 0	6 0	Sept., 1896	9 0 0	9 5 0
Langlaagte Estate	Transvaal	Gold	500,000	1 0 0	3 0	Jan. 1897	3 17 6	4 2 6
Primrose (New)	"	"	300,000	1 0 0	xrts.	Sept., 1896	3 7 6	3 12 6
Robinson	"	"	2,750,000	5 0 0	5 0	Jan., 1897	7 12 6	7 17 6
§Sheba	"	"	850,000	1 0 0	x-rts	Feb , 1897	1 17 6	2 0 0
Sim. & Jack (New)	"	"	5,000,000	5 0 0			3 17 6	3 12 6
‡Wemmer	Witw'sr'd	"	55,000	1 0 0	15 0	Jan., 1897	6 10 0	6 15 0

† Dividend pending. ‡ Ex-dividend. § Ex-rights.

PARIS. Week ending Feb. 19.

NAME OF COMPANY.	Country.	Product.	Capital Stock.	Par value.	Divs. last year.	Prices. Op'ning.	Prices. Closing.
			Francs.	Fr.	Fr.	Fr.	Fr.
Aciéries de Creusot	France	Steel mfrs.	27,000,000	2,000	80.00	2,049.50	2,085.00
" " Firminy	"	" "	4,000,000	500	85.00	1,797.5	1,780.00
" " Fives-Lille	"	" "	12,000,000	500	35.00	820.00	810.00
" " la Marine	"	" "	20,000,000	500	37.50	1,790.00	1,805.00
" " Longwy	"	" "		500	35.00	897.50	890.00
Aguas Tenidas	Spain	Iron pyrites	10,000,000	500	25.00	120.00	115.00
Anzin	France	Coal			170.00	4,900.00	4,970.00
Boleo	Lower Cal.	Copper		500	65.00	1,505.00	1,580.00
Briansk	Russia	Coal & Iron				1,345.00	1,340.00
Bruay	France	Coal	3,000,000	400	700.00	27,000.00	25,900.00
Callac	Venezuela	Gold	32,200,000	125		4.00	4.00
Cape Copper	S. Africa	Copper		50	1.50	72.00	63.75
Champ d'Or	"	Gold		25		30.00	27.00
Courrieres	France	Coal	600,000	300	160.00	1,650.00	1,650.00
De Beers Consolidated	S. Africa	Diamonds	98,750,000	125	15.62	776.00	741.50
Dombrowa	Russia	Coal		500		565.00	565.00
Dynamite Centrale	France	Explosives		500	12.50	553.00	517.00
Fraser River	Brit. Col'mb	Gold				43.00	39.00
Huanchaca	Bolivia	Silver		125	5.00	70.00	65.00
Huta-Bankowa	Russia	Iron & steel				3,440.00	3,175.00
Langlaagte Estate	S. Africa	Gold	11,750,000	25	11.25	111.00	107.00
Laurium	Greece	Zinc & lead	16,300,000	500	40.00	685.00	670.00
Lautaro	Chile	Nitrates		125		152.00	148.00
Malfidano	Italy	Zinc	12,500,000	500	40.00	1,059.00	1,035.00
Metaux, Cie. Fran. de	France	Metal d'lers.	25,000,000	500	12.00	705.00	665.00
Mokta-el-Hadid	Algeria	Iron	18,312,500	500	40.00	80.00	785.00
Nickel	N. Caled'nia	Nickel	14,720,000	500	30.00	225.00	214.00
Paccha-Jazpampa	Chile	Nitrates				22.00	22.00
Penarroya	Spain	Coal, etc.		500	65.00	1,685.00	1,515.00
Rebecca	Colo'do, U.S.	Gold				7.75	8.50
Rio Tinto	Spain	Copper	81,250,000	250	27.65	706.00	673.00
Robinson	S. Africa	Gold		125	12.50	218.50	2 5.00
Saint Elie	Fr. Guiana	"	4,000,000	25		18.00	16.00
Salines de l'Est	France	Salt		500	20.00	333.00	330.00
Sels Gem. de la Rus. Mer	Russia	" etc				615.00	602.00
Tharsis	Spain	Copper		50	8.75	179.50	170.00
Vielle Montagne	Belgium	Zinc	9,000,000	80	20.00	540.00	531.00

MEXICO. Week ending Feb. 18.

NAME OF COMPANY.	State.	No. of shares.	Last dividend.	Last assessment.	Prices. Opening.	Prices. Closing.
Amistad y Concordia	Hidalgo	9,600	$0.7		$25	$30
Angustias	Guanajuato	2,400	10.00		490	500
Arevalo y Anexas	Hidalgo		10.00		360	300
Asturiana y Anexas	Zacatecas	2,500	10.00		220	210
Bartolome de Medina	Hidalgo	2,000	3.50		150	100
Carmen	"	1,100	7.75		350	400
Castellana y San Ram	Tepic	2,448	3.00		100	80
Cerro Colorado	Chihuahua	15,000		$1.00	10	10
Cinco Senores y An	Guanajuato	2,000	25.00		960	940
Concepcion y Anexas	S. Luis Potosi	2,700			180	100
El Oro	Guanajuato	500			4	60
Guadalupe	"	10,000	2.00		200	180
Luz de Maravillas	Hidalgo	1,100			160	200
Pabellon	"	1,000	27.89		180	200
Purisima de los Com.	Zacatecas	2,400			10	5
Real del Monte	Hidalgo	2,554	10.00		1,080	1,000
Rosario y Anexas	Durango	4,800			50	60
San Francisco	Hidalgo	2,000	3.00		290	300
S. Ped. Chalchihuites	"	1,000	2.00		100	80
San Rafael y Anexas	"	1,200	20.00		950	930
do. free stock	"	1,200	14.00		450	440
Sta. Maria de la Paz	S. Luis Potosi	2,400			420	480
Soledad	Hidalgo	960	7.50		400	425
Sorpresa	"	960	5.00		280	300
Trinidad	Guanajuato	2,000			60	50
Tlauzingo	Puebla	2,400			30	40
Union	Hidalgo	2,000	8.00		300	350
Zaragoza	"	1,100			15	15
Zomelahuacan (gold)	Vera Cruz	5,000			100	100
Zona Min. de Pozos	Guanajuato	2,400		1.50	15	40

NOTE.—In most Mexican mining companies the shares have no fixed par value. The capital is formed of a certain number of shares, the total value not being named. Prices are in Mexican dollars.

VALPARAISO, CHILE.* Jan

NAME OF COMPANY.	Capital.	Share value Nominal	Share value Paid up.	Last Dividend.	Prices. Bid.	Prices. Asked.	Prices. Last sale
Arturo Prat	$3,300,000	$100	$100	1 per cent.	$29	$30	$30
Caracoles	315,000	100	100	5 "			
Descub. de Huantajaya	1,000,000	100	100	8 "			
Huanchaca de Bolivia	8,000,000	25	25	4 "	38½	39	38½
Oruro	800,000	200	200		340	350	350
S. Agustin de Huantajaya	1,500,000	100	100	2½ per cent.			
Todos Santos	2,000,000	100	100	1 "	16	17	16
Nitrate Cos:							
Agua Santa	3,000,000	50	50	7 "	150	152	152
Antofagasta	2,000,000	200	200	5 "	150	15	150
Union	3,000,000	200	500		49	50	50

* Special Report of Jackson Bros. Values are in Chilean pesos or dollars.

SHANGHAI, CHINA.* Feb. 11.

NAME OF COMPANY.	Country.	No. of shares.	Value. Par.	Value. Paid up.	Last dividend. Date.	Last dividend. Amount.	Price.
Jelebu Mg. & Trad	China	45,000	$5	$5	Oct., 1894	$0.25	Taels 1.61
Punjom Mg. Co., Ltd.	"	60,000	4	3.75			" 8.03
do. pref	"	30,000	1	1			" 2.37
Raub Australian G. Mg. Co.	"	200,000	£1	13s. 10d.	Dec., 1893	0.21	" 8.03
Sheridan Con. Mg. Co.	Colorado, U.S	20,000	Taels 100	Taels 100			" 3.00

* Special Report of J. P. Bissett & Co. The prices quoted are in Shanghai taels.

DENVER, COLO.*

NAME OF COMPANY. ‡	Par val.	Feb 22. † B.	Feb 22. † A.	Feb. 23. B.	Feb. 23. A.	Feb. 24. B	Feb. 24. A.	Feb. 25 B.	Feb. 25 A.	Feb. 26 B.	Feb. 26 A.	Feb. 27. B.	Feb. 27. A.	Sales.
L'd Mines	$5	.....	.....	.61	.61¼	.62½	.63¼	.61	.62¾	58	59½	.56¼	.56¼	11,900
Anaconda	1	.....	.....	.03	.03½	.03½	.03¾	.03¼	.03¾	.03¼	.03¾	.03¼	.03½	2,000
Bangkok	1	.....	.....	.09¾	.09¾	.09	.09¼	.09	.09¾	.08	.....	.08¾	.....	2 000
Bankers	1	.....	.....	.04¾	.05	.05¼	.07¾	.04¾	.07	.4¼	.....	.05½	.06	2,500
Big Six	1	.....	.....	.06½	.07	.06¼	.06¾	.06¼	.07	.06	.06¾	.05¾	.06	6,500
Garf. Gr	1	.....	.....	.05¼	.05¾	.04¾	.06¼	.05	.05¼	.06¼	.06¼	.05¼	.05¾	103,000
Gold Stand.	1	.....	.....	.004	.005	.004	.005	.004	.005	.004¾	.005	.004¾	.005	7,000
Insley	1	.....	.....	.06¼	.06¾	.05¾	.06¾	.06	.06¾	.05½	.07	.05	.07	5,500
Iron Clad	1	.....	.....	.48¾	.49¼	.48¾	.48¾	.48	.48¾	.47¾	.47¾	.47¾	.48	700
Isabella	1	.....	.....	.12¾	.13¼	.12¾	.13¼	.12¼	.13¼	.11	.....	.....	.....	1,100
Jefferson	5	.....	.....	.36	.38½	.33	.36	.34	.37	.30	33	.30	..	1,300
Mollie Gib	1	.....	.....	.08½	.11	.09¾	.....	.08	.....	.06	.....	.06	.....	7,000
Ms. Rosa	1	.....	.....	.04¾	.05¼	.04¾	.05¼	.04¼	.05¼	.04¼	.05¼	.04¼	.05	1,500
New Zeal	1	.....	.....	.12¾	.13¾	.12¾	.14¼	.12¼	.14	.12¼	.13¼	.....	.14	3,000
Pharmacist														
List. Pr.														
Addie C	1	.....	.....											
Aola	1	.....	.....	.01⅜	.01¼	.01⅜	.01½	.01¼	.01⅜	.01⅜	.01⅜	.01⅜	.01⅝	3,000
C. C. Imp	1	.....	.....	.001	.001¼	....	....	.001⅜	.002	.00.⅜	.002	.00.⅜	.00.⅜	46, 00
Cannon Ball	1	.....	.....											
Defender	1	.....	.....	.004¼	.004¾	.003	.005	.004¼	.004⅜	.004¾	.005½	.0 4	.006¾	4,000
Dictator	1	.....	.....	.001¾	.001¾	.....	....	.001¾	.002	.001¾	.001	.001¾	....	4,000
Drexel	1	.....	.....	.001				.001				.001¾	....	1,000
Eclipse	1	.....	.....	.002¾	.003	.002¾	.003	.002¾	....	.002¾	.003¾	.002	.003¾	12,000
Finance	1	.....	.....	.005¾	.0.6¾	.005	.007½	.004¾	.007	.0 4¾	.006	.004¾	.007	10,000
Gene Field	1	.....	.....	.001¾	.002	....	....	.001¾	.0.2	.001¾	.001¾	.00.¾	.001¾	19,000
Geo. Wash	1	.....	.....	....	....	....	....	....	....	....	....	....	....	
Gold Field	1	.....	.....	0.2¼	.....	.002	.002¾	.0.2¼	.002¾	.002	.003	.002	.003	10,000
Gold. Hope	1	.....	.....											
Gold Queen	1	.....	.....	.001	.001¼	.001	.001¼	.001	.001¼	.001	.001¼	.001	.001¼	11,000
Gregory	1	.....	.....											
Hecla	1	.....	.....	.001¼	.002					.110	.003			51,000
Henrietta	1	.....	.....	.003	.009	.006	.006½			.005½	.007	.004	.006	1,000
Illinois	1	.....	.....	0.8¼	.008¾	.0.8¼	.0.9	.008¾	.009	.008¾	.009¾	.0.8¾	.009	11,000
Internat'l	1	.....	.....	.001½	.002	.001¾	.003¾	.001¾	.0019¾	.001¾	0.19	.001¾	.0019¾	42,000
Justine	1	.....	.....	.002¼	.002½	.002¾	0.2¾	.002	....	.002	.003	.002¼	.002¾	5,000
Kimberly	1	.....	.....	....	....	....	....	....	....	....	....	....	....	
Linc. Boy	1	.....	.....	....	.001	....	.001	....	.001	....	.001¾	....	.001	27,000
Millionaire	1	.....	.....	.001¾	.002	.001¾	....	.001¾	....	0.01	002	.001¾	....	5,000
Orient	1	.....	.....	....	.001	....	....	....	....	....	....	....	....	2,000
Puritan	1	.....	.....	.003¾	....	....	....	.002¾	.003	.002¾	.003¾	.003	.003¾	2 000
Q'n Victoria	1	.....	.....											
Reno	1	.....	.....	.03¾	.03¾	.03¾	.03½	.03¾	.03¾	.02¾	.03¾	.02¾	.03¾	3,000
Royal Age	1	.....	.....	.003	.003¾	.002¾	.003¾	.002¾	.....	.002¾	.002¾	.0 2¾	003	18,000
Sentinel	1	.....	.....	.001¾	.001¾	.001¾	.001¾	.001¾	.001¾	.001¾	.001¾	.001¾	.001¾	192,000
W. Cr. Con.	1	.....	.....	....	.001	....	....	....	....	....	....	....	....	2,000
Unl. Act.														
Ætna	1	.....	.....	0.3¼	.003¾	.003¾	.003½	.003¼	.003¾	.003¼	.006	.0058	.0068	5,000
Arcadia	1	.....	.....	....	.003½	.001¾	.005	.004½	.005	.0.3¾	.....	.003	.006	1,000
Alamo	1	.....	.....											
Arg. J.	1	.....	.....	.35	.36¼	.35	.35	.34	.34¼	.35	.....	.30	.31	7,000
Ben Hur	1	.....	.....	.05¼	.05¾	.15	.05¼	.04¼	.05½	.04¾	.05¼	.05	.05½	1,000
Chimb'razo	1	.....	.....	.005½	.006	.005¼	.006	.005	.006	.004½	.005½	.005	.006	3,000
C. C. & M.	1	.....	.....	.02¾	.03	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	....	.03	7,000
Elkton	1	.....	.....											
Eureka	1	.....	.....	.005		.003		.005				.005		8,000
Goldsmith	1	.....	.....	.004	.005½	.003	.005	.004	.005	.003¾	.005	.0 3½	....	32,000
Jack Pot	1	.....	.....	.07	.07¾	.07¼	.07¾	.07	.07¾	.07	.07¼	.6¾	.07½	3,000
Mt. Beauty	1	.....	.....	.02¾	.03	.02¾	.02¾	.02¾	.02¾	.02¾	.03	.02	.03	10,000
Old Gold	1	.....	.....	.00 6¾	.007	.00 6¾	.00 6¾	.00 5¾	.00 6	.00 3¾	.00 6	.00 5¾	.006¼	147,000
Portland	1	.....	.....	.94	.95	.86	.88	.70	.75	.76	.79	.80	.89	1,000
Sacram'nto	1	.....	.....	.03½	.03¾	.03¼	.04	.03	.03¼	.13	.....	.03¼	.....	2,000
Tamarack	1	.....	.....	....	.03¾	....	.03¾	.03¼	.03¾	.13	.03¾	.03¼	.03¾	75,500
Union Gold	1	.....	.....											
Va. M.	1	.....	.....											
Wire Gold	1	.....	.....	.04¾	.04¾	.04¼	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.05	99,000
Work	1	.....	.....	.08¼	.08¾	.08¼	.08¾	.08	.....	.08	.08¾	.....	.....	1,500

* Official quotations Colorado Mining Stock Exchange. † Holiday.
Shares sold, listed, 627,100; unlisted, 406 700. Total, 1,033,700.

SALT LAKE CITY, UTAH.* Week ending Feb. 27.

STOCKS.†	Par value.	Bid.	Asked.	Actual selling price.	STOCKS †	Par value	Bid.	Asked.	Actual selling price.
Ajax	$10	$0.75	$0.80	$0.78	Horn Silver	$25	$1.85	$2.25	
Alliance	1	.15	.35		Little Pittsburg	5	.02⅜	.02⅝	$0.02⅜
Am. Nat. Gas		.01	.02		Lucky Bill	10	.18	.23½	20
Anchor	20	1.00	1 25	1.25	Malvern	2½	.21	.23	
Annie	1		.10		Mammoth	25	2.10	2 15	2.10
Bogan	1	.05	.07¼		Mercur	25	6.75	7 00	6.90
Brick Con		.25	.50		Morgan	125	17½	.21	18½
Bullion Beck & C.	10	9.50	10.00	9.75	Northern Light	5	.85	.87½	82½
Buckeye		.13	.13¾	.13½	Ontario	100	10 25	11.25	10.75
Centen'l Eureka	50	65.00	70.00		Overland	5	.20	.40	
Dalton	5	02⅝	.02¾	.02⅝	Rover	10	.34	.37½	.37½
Dalton & Lark	1	19	.22½		Silver King	20	17.00	18.25	17.75
Daly	20	5.25	5.50	5.40	Sioux Con	10	80	1.00	
Daly West	20	7.95	8.15	8.00	Sunshine	10	.65	.75	.65
Dexter		.95	1.00	95	Swansea	5	2.00	2.05	2.00
Eagle	10	.03½	.04½	.03½	So. Swansea	1	1.75	1 80	1 75
Four Aces	1	.12½	.14	.13½	Tetro	1	.05	.07¾	07¼
Galena	10	1.15	1.20	1.15	Utah	10	1.15	1.20	1.20
Geyser-Marion	5	1.40	1.43½	1.45	Utah Con	1	50	.65	
Herschel	5	(6	10						

* Special Report of James A. Pollock. † All the companies are located in Utah.

PHILADELPHIA, PA.*

NAME OF COMPANY.	L'cation.	Par Val'e	Feb. 25. H.	Feb. 25. L.	Feb. 26. H.	Feb. 26. L.	Feb. 27. H.	Feb. 27. L.	Mar. 1. H.	Mar. 1. L.	Mar. 2. H.	Mar. 2. L.	Mar. 3 H.	Mar. 3 L.	Sales
Cambria Iron	Pa.	.....	40.00	.....	..	....	42.00	41.00	41.75	41.50	42.00	41.75	....	....	303
Choc. & Glf. Ctfs	I.T.	50	7.75	....	..	....	8.00	....	....	....	....	....	8 25	....	250
Hunt & Br. Top	Pa.	50	....	....	....	....	....	....	18 00	....	....	....	....	....	124
" pref	"	50	45.00	....	45.63	45.50	46.00	....	46 00	....	....	....	46.88	....	244
Lehigh C. & N.	"	50	39 50	39 00	39 50	39.00	39.50	39 00	39 50	....	....	....	39 50	39 00	28
Lehigh Valley	"	50	23 00	22.75	23 50	23.00	23.25	23 00	24.00	23 63	24.88	24.88	25.25	25.13	7,321
Li'leschuylkill	"	50	53.00	....	....	....	....	....	....	....	....	....	....	....	1
Penna. R. R.	"	50	52.13	....	52.25	52 13	52.38	52.25	52.70	52.25	52.50	52 25	52.88	52 50	2,560
Pa. Salt Mfg. Co.	"	50	....	....	....	....	....	....	....	....	....	....	....	....	
Penna. Steel	"	..	....	....	....	....	....	....	....	....	....	....	....	....	
United Gas Im.	Can.	.....	72 50	....	73.63	73.00	....	....	....	....	....	....	4.00	73.75	403
Welsh. of Can	Pa.	.. ..	....	....	....	....	2.00	1.88	....	....	....	....	....	....	95
Welsh Com'l	"	.. ..	....	....	....	....	....	....	....	....	....	....	....	....	35
" Com pr.	"	.. ..	....	....	....	....	....	....	....	....	61.00	64.50	....	....	95
" Light	"	....	....	....	....	....	....	....	....	....	44.00	....	44 00	....	12
West Coal	"														

* Official quotations Philadelphia Stock Exchange. Total sales, 11,286.

HELENA, MONT.* Week ending Feb. 20.

NAME OF COMPANY.	Location.	Company's office	Par value.	Bid.	Asked	Shares sold.	Price.
Am. Dev. & M. Co.	Mont. & Idaho	Butte, Mont.	$1	$0.90	$1 00	4 000	.90-.95
Bald Butte	L. & Cl'ke Co.	Helena "	1		2 25		
Bi-Metallic	Granite "	St. Louis, Mo.	5		1 75		
Combination	" "	" "	10		.35		
Granite Mt	" "	" "					
Helena & Victor	Missoula "	Helena, Mont.	5				
High Ore	Jefferson "	Butte "					
Iron Mountain	Missoula "	Helena "	10	.37½	40	1,000	.40-.41
Judge	Meagher "	" "			.10		
Merrill (Gold)	Jefferson "	Butte "	1				
Ontario	DeerLodge "	Helena "	1				
Yellowstone	Meagher "	" "	5		12½		

* Special Report of Samuel K. Davis. Total sales sold, 5,600.

PITTSBURG, PA.* Week ending March 2.

NAME OF COMPANY.	Location.	Par val	Bid.	Ask.	Selling price.	NAME OF COMPANY.	Location.	Par val	Bid.	Ask.	Selling price.
COAL:						NAT. GAS:					
Mansfield	Pa.	50	.....	.....	.....	Allegheny	Pa.	100	.....	.....	.....
N. Y. & C. Gas C.	"	50	.....	.....	.....	Chartiers Val	"	100	5	.....	.....
MINING:						Manufacturers	"	100	50	.....	.....
Ent'prise	Colo.	5	.....	.....	.....	Peoples' Nat. Gas	"	50	.....	.....	.....
Lustre	Mex.	10	.....	.....	.....	Peoples' Pipeage	"	25	13¾	14¼	.....
Silverton	Colo.	10	....	.....	.....	Pennsylvania	"	50	6¼	.....	.....
MISCELLANEOUS:						Philadelphia	"	50	16¾	16¾	.....
Carborundum	Pa.	100	.....	.....	.....	Wheeling	W.V.	50	18	.....	.....

* Official quotations Pittsburg Stock Exchange.

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par Val	Assessments. Total Levied.	Assessments. Date and Amount of Last.			Dividends. Total Paid.	Dividends. Date and Amount of Last.		
1	Adams, s. l. c.	Colo..	$1,500,000	150,000	$10	*				$693,500	Oct..	1895	.04
2	Ætna Cons., q.	Cal ..	500,000	100,000	5	*				90,000	Mar..	1897	.10
3	Alaska-Mexican, g.	Alask	1,000,000	200,000	5					191,031	Jan ..	1897	.10
4	Alaska-Treadwell, g.	Alask	5,000,000	200,000	25	*				3,100,000	Jan ..	1897	.37½
5	Anaconda Copper.	Mont.	30,000,000	1,200,000	25					2,250,000	Nov..	1896	1.25
6	Anchoria-Leland, g.	Colo..	600,000	600,000	1	*				42,000	Feb..	1857	.01
7	Argentum Juniata, g.s.l	Colo..	2,600,000	1,300,000	2	*				39,000	July..	1895	.03
8	Aspen Mg. & S., s. l.	Colo..	2,000,000	200,000	10	*				900,000	July..	1894	.10
9	Atlantic, c.	Mich.	1,000,000	40,000	25					740,000	Feb..	1897	1.00
10	Aurora, i.	Mich.	2,500,000	100,000	25	*				700,000	April.	1896	.50
11	Bald Butte.	Mont.	250,000	250,000	1	*				475,000	Feb..	1897	.02
12	Bangkok-Cora Bell, s. l.	Colo..	600,000	600,000	1					107,510	July..	1896	.01
13	Bates Hunter, g. s.	Colo.	1,000,000	1,000,000	1	*				67,500	Dec..	1891	.00¾
14	Belden, F. E., m.	N. H.	500,000	100,000	5	*				217,000	Jan ..	1896	.04
15	Big Six, g. s.	Colo..	500,000	500,000	1					2,500	May..	1896	.00½
16	Bi-Metallic, g. s.	Mont.	5,000,000	200,000	25	*				1,630,000	June.	1893	.10
17	Boston & M. Cons., g.s.c	Mont.	3,750,000	150,000	25	*				5,375,000	Feb..	1897	3.00
18	Brotherton, i.	Mich.	2,000,000	80,000	25	*				120,000	Mar..	1893	.50
19	Bullion, Beck & Champ.	Utah.	1,000,000	100,000	10	*				2,067,000	Feb..	1897	1.00
20	Calumet & Hecla, c.	Mich.	2,500,000	100,000	25					48,350,000	Feb..	1897	15.00
21	Cariboo.	B.C..	800,000	800,000	1					140,965	Mar..	1897	.02
22	Centen'l-Eureka, g.s.l.c	Utah.	1,500,000	30,000	50	30,000	Mar..	1889	1.00	1,920,000	Feb..	1897	1.00
23	Central, c.	Mich.	500,000	20,000	25	100,000	Oct..	1861	.65	1,970,000	Feb..	1891	1.00
24	Charleston, p. r.	S. C..	1,000,000	10,000	100	*				150,000	Feb..	1897	1.00
25	Clay County, g. s. c.	Colo..	60,000	60,000	1	*				52,000	Nov..	1891	.02
26	C. O. D., g.	Colo..	500,000	500,000	1	*				25,000	Mar..	1896	.01
27	Cœur d'Alene, s. l.	Idaho	5,000,000	500,000	10					340,000	June.	1893	.06
28	‡Cons. Cal. & Va., g. s.	Nev..	21,600,000	216,000	100	4,960,130	Jan ..	1897	.25	3,898,800	Feb..	1895	.25
29	Cons. New York, g. s.	Nev..	10,000,000	100,000	100	168,000	Jan ..	1896	.05	10,000	Feb..	1893	.10
30	Coptis, g. s.	Nev..	10,000,000	100,000	100					77,000	Feb..	1895	.01
31	Cortez, Ltd., s. g.	Nev..	1,500,000	300,000	5					735,000	Feb..	1893	.15
32	Dalton & Lark, s. l.	Utah.	2,500,000	2,500,000	1					87,500	Aug..	1896	.00½
33	Daly, s. l.	Utah.	3,000,000	150,000	20					2,925,000	Mar..	1897	.25
34	+Deadwood-Terra, g.	S. D..	5,000,000	200,000	25	*				1,240,000	Aug..	1896	.50
35	De Lamar, g. s.	Idaho	2,000,000	400,000	5	*				2,250,000	Oct..	1896	.25
36	Derbec Blue Gravel, g.	Cal ..	10,000,000	100,000	100	110,000	June.	1893	.10	280,000	Aug..	1891	.10
37	Dexter, g. s.	Nev..	1,000,000	100,000	10	8,000	June.	1892	.08	100,000	Aug..	1893	.33
38	Elkhorn, s.	Mont.	1,000,000	200,000	5					1,212,000	June.	1865	.06
39	Elkton Cons., g.	Colo..	1,250,000	1,250,000	1					211,960	Feb..	1897	.02
40	Enterprise, g. s.	Colo..	2,500,000	500,000	5	*				825,000	May ..	1893	.25
41	Eureka Cons., g. s. l.	Nev..	1,000,000	50,000	20	567,500	Feb..	1897	.25	5,112,500	Jan ..	1892	.25
42	Evening Star, s. l.	Colo..	500,000	50,000	10	*				1,437,500	Dec..	1889	.25
43	Florence, s.	Mont.	2,500,000	500,000	5	*				121,712	Feb..	1897	.01
44	Franklin, c.	Mich.	1,000,000	40,000	25					1,240,000	Jan ..	1894	2.00
45	Galena, g. s. l.	Utah.	1,000,000	100,000	10					71,000	Jan ..	1897	.05
46	Garfield-Grouse, g.	Colo..	1,200,000	1,200,000	1	*				24,000	Dec..	1896	.01
47	Gold Coin, g. s.	Colo..	1,000,000	200,000	5	*				120,000	Feb..	1897	.10
48	Golden Eagle, g.	Colo..	1,000,000	1,000,000	1	*				10,000	Sept..	1896	.01
49	Golden Fleece, g. s.	Colo..	600,000	600,000	1	*				563,179	Dec..	1896	.01
50	Gold & Globe, g.	Colo..	750,000	750,000	1					36,000	Aug..	1896	.00 5/6
51	Gold Rock, g. s. c.	Colo..	500,000	500,000	1	*				28,750	Dec..	1891	.01
52	Granite Mountain, g. s.	Mont.	10,000,000	400,000	25	*				12,120,000	July..	1892	.20
53	Granite, s. l.	Idaho	500,000	200,000	2.50	*				83,400	Nov..	1890	.10
54	Gt. West'n Quicksilv., q.	Cal ..	5,000,000	50,000	100					388,366	Nov..	1893	.10
55	Harquahala, g.	Ariz..	1,500,000	300,000	5					126,000	Nov..	1894	.12
56	Hecla Cons., g. s. c. l.	Mont.	1,500,000	30,000	50	*				2,175,000	Feb..	1897	.50
57	Helena & Frisco, s. l.	Idaho	2,500,000	500,000	5	*				475,000	Aug..	1896	.04
58	Holmes, s.	Nev..	10,000,000	100,000	100	345,000	Mar..	1890	.25	75,000	April.	1892	.25
59	Homestake, g.	S. D..	12,500,000	125,000	100	300,000	July..	1878	1.00	6,150,000	Feb..	1897	.25
60	Hope, s.	Mont.	1,000,000	100,000	10	*				672,252	Mar..	1897	.10
61	Horn-Silver, g. s. c. sp. l.	Utah.	10,000,000	400,000	25	*				5,130,000	Jan ..	1896	.12½
62	Iowa.	Colo..	1,000,000	1,000,000	1					65,000	Feb..	1897	.00½
63	Iron Mountain, s. l.	Mont.	5,000,000	500,000	10	*				492,500	Nov..	1896	.06
64	Iron Silver, s. l.	Colo..	10,000,000	500,000	20	*				2,500,000	April.	1889	.20
65	Isabella, g.	Colo..	2,250,000	2,250,000	1					202,500	Sept..	1896	.01
66	Jack Rabbit, g.	Cal ..	10,000,000	100,000	100	118,000	April.	1894	.02	250,000	April.	1891	.10
67	Jay Hawk, g.	Mont.	1,425,000	285,000	5					33,375	Dec..	1892	.12
68	Kearsarge, c.	Mich.	1,000,000	40,000	25	190,000	Oct..	1887	1.00	120,000	Dec..	1895	1.00
69	Kennedy, g.	Cal ..	10,000,000	100,000	100					1,796,000	Aug..	1895	.48
70	Leadville Cons., s. l.	Colo..	4,000,000	400,000	10	*				316,000	Feb..	1893	.03
71	Little Chief, s. l. i-o.	Colo..	10,000,000	200,000	50	*				820,000	Dec..	1890	.05
72	Maid of Erin, g. s. c. l.	Colo..	3,000,000	600,000	5	*				740,000	Nov..	1895	.02
73	Mammoth, g. s. c.	Utah.	10,000,000	400,000	25	*				1,150,000	Nov..	1896	.05
74	Mayflower Gravel, g.	Cal ..	1,200,000	60,000	20					166,897	Dec..	1895	.10
75	May-Mazeppa Con., l. s.	Colo..	1,000,000	1,000,000	1	*				170,000	Oct..	1891	.03¾
76	Mercur, g.	Utah.	5,000,000	200,000	25	*				625,000	Feb..	1897	.12½
77	Minnesota Iron, i.	Minn.	16,500,000	165,000	100	*				3,240,009	July..	1896	1.50
78	Mollie Gibson, s.	Colo..	5,000,000	1,000,000	5	20,000	Jan ..	1891	.02	4,080,000	Jan ..	1895	.05
79	Monitor, g.	S. D..	2,500,000	250,000	10					45,000	Oct..	1890	.03
80	Montana, Ltd., g. s.	Mont.	3,300,000	660,000	5	*				2,890 637	Oct..	1895	.06¼
81	Montana Ore Purchas'g	Mont.	1,000,000	40,000	25	*				520,000	Jan ..	1897	1.00
82	Moon Anchor Gold.		600,000	600,000	1	*				24,000	July..	1896	.01
83	Moose, g.	Colo..	600,000	600,000	1					186,000	Jan ..	1896	.01
84	Morning Star Cons., s. l.	Colo..	1,000,000	100,000	10	*				1,025,000	Dec..	1891	.25
85	Mt. Diablo, s.	Nev..	5,000,000	50,000	100	145,000	Nov..	1896	.10	225,000	Aug..	1893	.25
86	Mt. McClellan, g. s. l.	Colo..	1,250,000	250,000	5	*				21,936	June.	1891	.03
87	Mt. Rosa, g.	Colo..	1,000,000	1,000,000	1					30,000	Oct..	1896	.00½
88	Napa, q.	Cal ..	700,000	100,000	7	*				820,000	Jan ..	1897	.10
89	New Elkhorn	Colo..	1,500,000	300,000	5					72,000	Sept..	1896	.24
90	New Guston, g. s. c.	Colo..	550,000	110,000	5	*				1,198,120	Oct..	1892	.25
91	New Hoover Hill, g.	N. C..	300,000	120,000	2.50	*				22,500	Dec..	1885	.20
92	N.Y. & Hon. Rosario, s.g.	C. A..	1,500,000	150,000	10	*				720,000	Mar..	1897	.10
93	North Banner, g. s.	Cal ..	1,000,000	100,000	10	21,794	Oct..	1896	.02	20,000	July..	1891	.05
94	North Com'wealth, s.	Nev..	10,000,000	100,000	100	85,000	April.	1890	.25	25,000	June.	1891	.25
95	North Star, g.	Cal ..	2,000,000	200,000	10	20,000	June.	1885	.02	450,000	June.	1893	.50
96	Nugget, g.	Colo..	1,000,000	1,000,000	1	*				10,000	Jan ..	1895	.00½
97	Ontario, s. l.	Utah.	15,000,000	150,000	100					13,370,000	Jan ..	1897	.10
98	Osceola, c.	Mich.	1,250,000	50,000	25	*				2,122,500	Feb..	1897	1.00
99	Pacific Coast Borax, b.	Cal ..	2,000,000	20,000	100					422,500	July..	1893	1.00
100	Parrot, c.	Mont.	2,300,000	230,000	10	*				1,622,215	June.	1894	.05
101	Petro, s.	Utah.	1,000,000	10,000	100					17,500	July..	1891	.75
102	Pharmacist, g.	Colo..	1,200,000	1,200,000	1	*				80,000	Jan ..	1893	.01
103	Portland, g.	Colo..	3,000,000	3,000,000	1	*				923,000	Feb..	1897	.01
104	Quicksilver, pref., q.	Cal ..	4,300,000	43,000	100	*				1,823,911	June.	1891	1.25
105	" com., q.	Cal ..	5,700,000	57,000	100	*				643,867	July..	1882	.40
106	Quincy, c.	Mich.	1,250,000	50,000	25	*				9,070,000	Feb..	1897	8.00
107	Reed National, s.	Colo..	500,000	500,000	1	*				45,000	Dec..	1890	.01
108	Robinson Cons., s. l.	Colo..	10,000,000	200,000	50	*				585,000	Mar..	1886	.05
109	Running Lode, g. s. l.	Colo..	1,000,000	1,000,000	1	*				27,000	June.	1893	.00 1/6
110	St. Joseph, l.	Mo..	2,500,000	250,000	10					2,524,000	Dec..	1895	.25
111	Silent Friend, g. s. l.	Colo..	500,000	500,000	1	*				60,000	Aug..	1891	.25
112	Silver King, s.	Ariz..	10,000,000	100,000	100	272,858	Mar..	1897	.25	1,950,000	July..	1887	.25
113	Silver King, g. s. l.	Utah.	3,000,000	150,000	20	3,000	Jan ..	1897	.02	937,500	Feb..	1895	.25
114	Silver Mg. of L. V., s.	N. M.	500,000	500,000	1	*				300,137	Dec..	1891	.04
115	Small Hopes, s.	Colo..	5,000,000	250,000	20	*				3,275,000	Mar..	1896	.10
116	‖Smuggler Union, g. s.	Colo..	5,000,000	50,000	100					150,000	Oct..	1896	1.00
117	§Standard Cons., g. s.	Cal ..	20,000,000	200,000	100					3,717,868	June.	1895	.10
118	Swansea, g. s. l.	Colo..	600,000	60,000	10	*				39,000	Sept..	1892	.10
119	Tamarack, c.	Mich.	1,250,000	50,000	25					4,770,000	Dec..	1896	8.00
120	Teal & Poe, s. l.	N. M.	150,000	150,000	1	*				9,000	Nov..	1891	.01½
121	Tom Boy, g.	Colo..	2,000,000	200,000	10	*				410,000	Mar..	1896	.20
122	Trinity River, g.	Cal ..	500,000	500,000	1	*				15,000	July..	1893	.00½
123	United Verde, c.	Ariz..	3,000,000	300,000	10	*				562,500	Dec..	1893	.25
124	Union, g.	Colo..	1,250,000	1,250,000	1					73,000	June.	1896	.01
125	Union Leasing.	Colo..	500,000	500,000	1					340,000	July..	1895	.04
126	Utah.	Utah.	1,000,000	100,000	10	*				175,000	Feb..	1897	.02
127	Victor, g.	Colo..	1,000,000	200,000	5	*				745,000	Feb..	1897	.10
128	War Eagle	B.C..	500,000	500,000	1	32,500	Dec..	1894		187,000	Oct..	1896	.06
129	Woodside	Utah.	1,000,000	100,000	10					25,000	Oct..	1889	.25
130	Yankee Girl, s.	Colo..	1,300,000	260,000	5					520,000	July..	1891	.25

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par Val	Assessments. Total Levied.	Assessments. Date and Amount of Last.		
1	Ada Cons., s. l.	Utah.	$100,000	100,000	$1	$3,333	Nov..	1895	.01½
2	Ajax, g.	Colo..	1,000,000	1,000,000	1				
3	Alamo, g.	Colo..	1,000,000	1,000,000	1				
4	Alice, g. s. c.	Colo..	5,000,000	5,000,000	1	*			
5	Alliance, g. s. l.	Utah.	100,000	100,000	1	200,000	Dec..	1895	.10
6	Allouez, c.	Mich.	2,000,000	80,000	25	1,440,937	June.	1894	.20
7	Alpha Cons., g. s.	Nev..	10,500,000	105,000	100	257,500	Sept..	1896	.10
8	Alta, s.	Nev..	10,080,000	108,000	100	3,590,560	Jan ..	1897	.05
9	American, c.	Idaho	5,000,000	500,000	10	*			
10	American Belle, g.s.c.	Colo..	2,000,000	400,000	5	*			
11	Anaconda, g.	Colo..	5,000,000	1,000,000	5				
12	Anchor, g. s. l.	Utah.	1,500,000	150,000	10	560,000	Aug..	1893	.20
13	Aola, g.	Colo..	1,000,000	1,000,000	1	*			
14	Argonaut Cons., g. s.	Colo..	1,000,000	1,000,000	1	*			
15	Atlantic Cable Cons.	Colo..	1,500,000	1,500,000	1	*			
16	Bahama, g.	S. D..	1,250,000	250,000	5	3,125	Sept..	1893	.00¼
17	Bankers, g.	Colo..	1,250,000	1,250,000	1	*			
18	Belcher, s. g.	Nev..	10,400,000	104,000	100	3,312,420	Sept..	1896	.25
19	Belle Isle.	Nev..	10,000,000	100,000	100	240,271	July..	1896	.10
20	Ben Hur, g.	Colo..	900,000	900,000	1				
21	Blue Bell, g.	Colo..	500,000	500,000	1	*			
22	Blue Jay Cons., s. l.	Utah.	2,000,000	400,000	5	4,750	July..	1893	.004
23	Bob Lee, g.	Colo..	1,200,000	1,200,000	1	*			
24	Bullion, s. g.	Nev..	1,000,000	100,000	100	3,040,000	Feb..	1897	.10
25	Bunker Hill & S., s. l.	Idaho	3,000,000	300,000	10				
26	Burlington, g. s.	Cal..	10,000,000	100,000	100	3,000	May..	1896	.03
27	Buskhorn, g.	Colo..	900,000	900,000	1				
28	Butte Queen, g.	Cal..	1,000,000	100,000	10	16,000	Feb..	1893	.10
29	Calumet, g.	Colo..	1,400,000	1,400,000	1	*			
30	Central Lead, l.	Mo..	400,000	4,000	100	*			
31	Central North Star, g.	Cal..	1,000,000	100,000	10	10,000	July..	1893	.10
32	Challenge, s, g.	Nev..	5,000,000	50,000	100	300,000	Nov..	1896	.10
33	Chollar, g. s.	Nev..	11,200,000	112,000	100	2,021,600	July..	1896	.25
34	Chrysolite, s. l.	Colo..	10,000,000	200,000	50	*			
35	Cleveland Cliffs, l.	Mich.	5,000,000	50,000	100	*			
36	Columbine, g.	Colo..	1,000,000	1,000,000	1	*			
37	Confidence, g. s.	Nev..	2,496,000	24,960	100	1,636,974	Sept..	1896	.30
38	Cons. Imperial, g. s.	Nev..	5,000,000	50,000	100	2,082,500	Mar..	1897	.01
39	Copper Mountain, g.	Colo.	1,000,000	1,000,000	1	*			
40	Creede & C. C., g.	Colo.	800,000	800,000	1				
41	CrippleCreekCons., g.	Colo.	2,000,000	2,000,000	1				
42	Crip. Cr'k Gold Expl'n	Colo.	1,800,000	1,800,000	1				
43	Dante, g.	Colo..	1,250,000	1,250,000	1	*			
44	Denver City, s.	Colo..	5,000,000	500,000	10	*			
45	Denver Gold, g.	Colo..	300,000	60,000	5				
46	Dickens-Custer, g. s.	Colo..	2,100,000	420,000	5				
47	Enterprise, g.	Colo..	800,000	800,000	1				
48	Eureka Con. Drift, g.	Cal..	500,000	500,000	1	115,000	Feb..	1897	.05
49	Exchequer, g. s.	Nev..	10,000,000	100,000	100	725,000	Dec..	1896	.05
50	Favorite, g.	Colo..	1,200,000	1,200,000	1	*			
51	Fortunatus, g. s.	Colo..	100,000	100,000	1	*			
52	Found Treasure, g. s.	Nev..	10,000,000	100,000	100	55,770	Jan ..	1892	.50
53	Franklin Gold, g.	Colo..	1,000,000	1,000,000	1	*			
54	Free Coinage, g.	Colo..	1,000,000	1,000,000	1	*			
55	Galena, l. s.	Idaho	500,000	500,000	1				
56	Garden City, g.	S. D..	2,500,000	250,000	10	2,898	Sept..	1891	.01½
57	Gem, g.	Cal..	10,000,000	100,000	100				
58	Gold Belt, g. s.	Utah.	500,000	500,000	1	3,012	July..	1896	.00½
59	Golden Age, g.	Colo..	1,000,000	1,000,000	1	*			
60	Golden Dale, g.	Colo..	2,000,000	2,000,000	1	*			
61	Golden Fleece Grav. g	Cal..	130,000	130	1000	56,260	Mar..	1897	2.00
62	Gold Flat, g.	Cal..	1,000,000	100,000	10	13,000	Aug..	1893	.03
63	Gold King, g.	Colo..	1,000,000	1,000,000	1	*			
64	Gold Rock, g.	Colo..	1,000,000	1,000,000	1	*			
65	Gold Standard, g.	Colo..	1,000,000	1,000,000	1	*			
66	Gould & Curry	Nev..	10,800,000	108,000	100	4,850,400	Jan ..	1897	.15
67	Hale & Norcross, g. s.	Nev..	11,200,000	112,000	100	5,786,800	Jan ..	1897	.25
68	Hartshorn, g. s.	S. D..	1,250,000	250,000	5	8,750	Sept..	1891	.00½
69	Head Cent. & Tr., g.s.	Ariz..	2,000,000	200,000	10	22,824	Mar..	1892	.03
70	Hidden Treas., g. s.	Cal..	20,000	20,000	1	1,000	Nov..	1893	.05
71	Himalaya, s. l.	Utah.	1,800,000	180,000	10	10,000	Oct..	1892	.01
72	Idaho Co., Ltd., g.	Idaho	100,000	1,000	100	*			
73	Idlewild, g.	Cal..	1,000,000	100,000	10	*			
74	Inez, s. l.	Idaho	1,000,000	1,000,000	1	*			
75	Jack Pot, g.	Colo..	1,250,000	1,250,000	1				
76	Jackson, l.	Mich.	300,000	12,000	25	*			
77	Justice, g. s. c.	Colo..	500,000	500,000	1	*			
78	Keystone, g.	Colo..	1,500,000	1,500,000	1	*			
79	Kingman Silver, g. s.	Ariz..	10,000,000	100,000	100	5,000	Sept..	1891	.05
80	Lacrosse, g.	Colo..	1,000,000	100,000	10	*			
81	Lottie Gibson, g.	Colo..	1,000,000	1,000,000	1				
82	Matoa, g.	Colo..	5,000,000	1,000,000	5				
83	Mayflower, g.	Colo..	1,000,000	1,000,000	1	*			
84	Mexican, g. s.	Nev..	10,080,000	100,800	100	3,084,080	Nov..	1896	.20
85	Michigan Gold., g. s.	Mich.	2,500,000	100,000	25	40,000	Mar..	1892	.10
86	Milwaukee, s. l.	Idaho	500,000	500,000	1				
87	Modoc Chief, g. s. l.	Idaho	1,000,000	200,000	5	4,375	Jan ..	1892	.00½
88	Monarch, g.	Colo..	1,000,000	1,000,000	1				
89	Mutual, g.	Colo..	500,000	500,000	1				
90	Neath, g.	Colo	1,000,000	100,000	10				
91	New Gold Hill.	N. C..	1,750,000	350,000	5				
92	New Viola, s. l.	Idaho	750,000	150,000	5	*			
93	North Belle Isle, s.	Nev..	10,000,000	100,000	100	523,074	July..	1896	.10
94	Occidental Cons., g.s.	Nev..	10,000,000	100,000	100	468,652	Mar..	1897	.10
95	Original Keystone, s.	Nev..	10,000,000	100,000	100	250,000	Mar..	1892	.10
96	Oro Cache, g. s.	S. D..	1,250,000	250,000	5	6,250	July..	1893	.00½
97	Orphal Bell, g.	Colo..	1,000,000	1,000,000	1				
98	Overman Silver, g. s.	Nev..	1,152,000	115,200	100	4,188,560	Dec..	1896	.10
99	Pappoose, g.	Colo..	2,000,000	2,000,000	1	*			
100	Peer, s.	Ariz..	10,000,000	100,000	100	215,000	July..	1894	.05
101	Peerless, s.	Nev..	10,000,000	100,000	100	410,000	July..	1894	.05
102	Pine Hill, g.	Cal ..	1,000,000	100,000	10	25,000	Jan ..	1897	.05
103	Pioche Con., g. s. l.	Nev..	20,000,000	2,000,000	10	*			
104	Potosi, g. s.	Nev..	11,200,000	112,000	100	2,021,600	Nov..	1896	.05
105	Princess, g.	Colo..	1,000,000	1,000,000	1				
106	Puritan, g, s.	Colo..	1,500,000	150,000	10	*			
107	Quincy, c.	Colo..	3,000,000	300,000	10				
108	Red Mountain, s.	Colo..	300,000	60,000	5	22,500	Mar..	1891	.12½
109	Ruby & Dun., g. s. l.	Nev..	25,300	506	25	*			
110	St. Mary, c.	Mich.	1,000,000	40,000	25	4,000	July..	1895	.05
111	Savage, g. s.	Nev..	11,200,000	112,000	100	1,051,400	Jan ..	1897	.20
112	Seg. Belcher & M., g.s.	Nev..	10,000,000	100,000	100	340,000	Nov..	1896	.10
113	Silver Age, g. s. l.	Colo..	2,000,000	200,000	10	*			
114	Silver Hill, s.	Nev..	10,800,000	108,000	100	1,992,600	July..	1894	.05
115	Silver Queen, c.	Ariz..	5,000,000	200,000	25	*			
116	Silver State, g.	Colo..	700,000	700,000	1	*			
117	Siskiyou Con., s.	Cal ..	2,000,000	200,000	10	44,000	June.	1896	.01
118	Specimen, g.	Colo..	1,200,000	1,200,000	1				
119	Temonj, g.	Colo..	1,000,000	1,000,000	1				
120	Tombstone, g. s. l.	Ariz..	12,500,000	500,000	25	*			
121	Tornado Con., g. s.	Nev..	100,000	100,000	1	*			
122	Union Con., g. s.	Nev..	10,000,000	100,000	100	2,545,000	Sept..	1896	.20
123	Utah Cons., s.	Nev..	10,000,000	100,000	100	420,722	Feb..	1897	.05
124	Victory, g. s.	S. D..	1,250,000	250,000	5	2,625	Nov..	1896	.00½
125	Virginia M. Cons., g.	Colo..	1,000,000	1,000,000	1				
126	Waterloo, g.	Cal..	2,000,000	200,000	10	30,000	Aug..	1893	.15
127	West Granite Mt., s.	Mont.	500,000	100,000	5				
128	Whale, g. s. l.	Colo.	500,000	500,000	1	*			
129	Work, g.	Colo..	1,250,000	1,250,000